Airport Related Qualifying Matters in the proposed Waimakariri District Plan - Kaiapoi

Section 77K RMA Assessment

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Executive Summary

1. This report considers the rationale for making MDRS less enabling (lower density residential development) in order to accommodate a qualifying matter for the protection of amenity in the area affected by aircraft noise levels of 50dB Ldn and above, and consequential protection of Christchurch International Airport's (the Airport) operations from reverse sensitivity effects. The area in which this qualifying matter applies is the recently remodelled 50 dB Annual Average Outer Control Boundary (AAOCB). The spatial extent of the AAOCB is shown on a map attached as **Appendix One**.

2. Exposure of people and communities to the adverse effects of aircraft noise can then result in complaints and pressure to reduce airport operations (for example, via imposition of a night-time curfew) and other adverse reverse sensitivity effects on Airport operations. Those reverse sensitivity effects could significantly impact upon the efficient operation of the Airport. This is a matter which is largely tied to residential density, as allowing more people to establish homes or other sensitive activities within the Contours will increase the number of people exposed to aircraft noise. This would correspondingly increase the risk of adverse reverse sensitivity effects which inhibit Airport operations.

3. The Council has commenced a planning process to respond to its obligations under the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (the Enabling Act) and the National Policy Statement on Urban Development 2020 (NPSUD). In summary, the Enabling Housing Act requires Council to apply medium density residential standards (MDRS) to relevant residential zones in order to enable residential intensification.[1]

4. The proposal to rezone land and apply medium density standards introduces the potential for significant further residential intensification. This has the potential to enable increased development on land within the AAOCB, beyond that currently provided for in the proposed Plan.

5. The Airport operates 24/7, and this availability provides a significant operational advantage for the Airport's users and its ability to connect to the rest of the world. Any reduction in that capacity would have notable consequences in the Airport's ability to deliver its operational outcomes, and the regional, national and international benefits that arise from that.

6. The assessments and attached reports confirm that:
   a. Christchurch Airport is nationally significant infrastructure and fulfils an important role in domestic, national and international passenger and freight services;
   b. The timing and frequency of international air services are often beyond the control of the Airport; being dictated by other parties (slot taker restrictions);
   c. As the Airport operates 24/7 without curfew or capacity constraint, it is a significant contributor to the national and regional economy;
   d. The attached reports (Airbiz, Paling Consulting):
      - note the significance and importance of Christchurch Airport in international and domestic passenger travel and freight movements, and the interconnectivity between domestic and international networks;
      - highlight the commercial international passenger "slot taker" restrictions and the significance of the domestic multi modal night-time freight network

[1] Resource Management Act 1991, s77G: inserted by Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021, s9.

- identify the risk to Airport operations from reverse sensitivity effects that could lead to constraints on Airport operations. This includes 5 international case studies illustrating the adverse results arising from a lack of or late adoption of safeguarding principles;

e. The Property Economics report identifies the risks that constraints on Airport operations poses to the economic wellbeing of Canterbury and the South Island;

f. Tying these themes together, the Marshall Day Acoustics (MDA) report identifies the amenity impacts that arise from noise exposure for sensitive activities within the 50dB Ldn Air Noise Contour, and the increasing annoyance level trend for those living in such locations. Related to the last issue, MDA also assess the relevance of the research behind these findings to the Kaiapoi context;

g. In particular, MDA assess the issue of whether it is appropriate, from an acoustic perspective, to retain a 50 dB outer control boundary contour, or replace it with a 55 OCB. Overall, MDA conclude that adopting a 55dB contour, with no planning controls in the 50 to 55 space, would lead to poor environmental outcomes for sensitive activities in those locations;

h. The current regional and district planning regime provides a clear and coherent policy platform built on the above, and seeks to avoid sensitive activities within the 50dB Ldn contour as this:

- recognises the social and economic importance of the Airport, and the need to integrate land use development with infrastructure;
- seeks to avoid incompatible activities within the 50dB contour which may result in reverse sensitivity effects on the Airport;
- recognises that it should not compromised by urban growth and intensification; and
- enables the Airport's safe, efficient and effective operation and development.

i. Caselaw supports the current planning approach.

7. Given the above, the proposed MDRS can be considered as the antithesis of the provisions that unpin the current planning regime designed to achieve appropriate amenity outcomes for residents beneath the contours and to ensure effective and efficient operation of the Airport. As a result, it is appropriate to make the MDRS less enabling within the AAOCB to provide for the airport noise qualifying matter.

8. An assessment undertaken under s32 of the RMA is attached as **Appendix Nine.** The assessment finds that:

a. the proposal to amend the MDRS provisions on land within the AAOCB to make it less enabling is the most appropriate objective for achieving the purpose of the RMA as it:

- is necessary to accommodate a valid qualifying matter in respect of s77I(e);
- does not unreasonably frustrate the Council's implementation of its obligations under the NPSUD, RPS and in turn, the purpose of the Act and the intent of recent amendments to the Act to improve housing supply and enable residential intensification; and
- best aligns with the Plan policy framework relating to health, amenity and Airport operational outcomes

9. In addition to the above, the report also considers, from a s32 perspective, whether it is appropriate to retain a 50 dB outer control boundary contour, or replace it with a 55 OCB. The assessment concludes that retaining the 50 dB OCB has direct environmental, economic and social benefits, and minimal economic and social costs. Moreover, it is both effective and efficient.

10. Consequential to the above, the Variation should include alterations to the MDRS to accommodate the airport noise qualifying matter. Specifically, this should include the following:
    a. Amendments to table SUB-S1 to amend the minimum allotment standards, as described in the Section 77K(1)(b) assessment above; and
    b. Delineate the AAOCB on the relevant Planning Maps to show the extent of the qualifying matters in the District; as illustrated in the plan attached as **Appendix Ten**.

Introduction

1. The Waimakariri District Council (the Council) is preparing a Variation to the proposed Waimakariri District Plan (the proposed Plan) to respond to the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 (the Enabling Act). Amongst other things, the Enabling Act requires the Council to introduce Medium Density Residential Standards (MDRS) into the proposed Plan to enable housing intensification and thereby improve housing supply. The Enabling Act does, however, allow the Council to identify circumstances (Qualifying Matters) where the scale and density of housing intensification should be less than that anticipated by the MDRS. Council is required, under the Enabling Act, to notify these changes for public submission on or before the 20th August 2022.

2. This report considers the rationale for making MDRS less enabling (lower density residential development) in order to accommodate a qualifying matter for the protection of amenity in the area affected by aircraft noise levels of 50dB Ldn and above, and consequential protection of Christchurch International Airport's (the Airport) operations from reverse sensitivity effects. This is an existing qualifying matter under section 77K of the Resource Management Act 1991 (RMA). This report and related recommendations only relate to the relevant residentially zoned land located at Kaiapoi (as shown in the proposed Plan) and subject to the proposed Variation; being the General Residential Zone (GRZ) and the Medium Density Residential Zone (MDRZ). For certainty, it does not relate to the Large Lot Residential Zone, Settlement Zones, Commercial, Industrial, Special Purpose, Rural or Open Space Zones, or areas identified as Development Areas at Kaiapoi or at other locations in the District.

3. By way of a summary, the Airport is proposing a qualifying matter that will duplicate the current residential density standards of the operative District Plan (for land that is affected by aircraft noise levels of 50dB Ldn and above) within the proposed Plan. At paragraph 11 below, the spatial extent of this area is defined. Subsequent assessments describe the nature of the proposed qualifying matter rules.

4. Noise contours have been in various planning documents in the greater Christchurch area since the early 1990's. At a general level the contours are linked to a suite of objectives, policies and, in some cases, rules which manage the development of sensitive land uses in areas exposed to aircraft noise levels of 50dB Ldn and above. In the case of Waimakariri District the Contours identify land that will be subject to aircraft noise at levels which have been shown to cause adverse community health and amenity effects. With respect to Kaiapoi, Part A of the report below provides a detailed analysis of the relevant residential planning regime relating to this issue. Of note, and by way of introductory comment, the current operative District Plan provisions do not prescribe specific land use restrictions linked to the existing noise contour[2]. Rather, the rules simply control residential density which, indirectly and to some extent, address the noise exposure issue. Within this context, the qualifying matter proposed by the Airport will include the existing planning framework within the proposed Plan and, thus, the status quo.

5. The significance of, and need for, this is found in the subsequent assessments which conclude that exposure of people and communities to adverse aircraft noise effects can result in complaints and pressure to reduce or alter airport operations (for example, via imposition of a night-time curfew) and other adverse reverse sensitivity effects on Airport operations. The

[2] The one exception to this being subdivision assessment matter 32.1.1.28 clause r.

attached reports and the assessment contained in Part A below demonstrate the potential for such effects to arise and highlights:

a. five international case studies illustrating the adverse effects arising from a lack of or late adoption of airport safeguarding principles;
b. the increasing annoyance trends for, and the sensitivities of, those living beneath 50dB contours; and
c. the relationship between land use planning controls, airport operations and community complaints (MDA report, Section 6.1. **Appendix Six**, and **Appendix Seven**).

6. While the reports and assessment referenced above largely relate to international or large-scale urban areas, there is no evidence to suggest that Kaiapoi, as a community, would behave in a different fashion. This issue is discussed in more detail in a Memorandum prepared by Marshall Day Acoustics attached as **Appendix Seven**.

7. Reverse sensitivity effects could significantly impact upon the efficient operation of the Airport. This is a matter which is largely tied to residential density, as allowing more people to establish homes or other sensitive activities within the contours will increase the number of people exposed to aircraft noise. This is particularly so given the intensification outcomes anticipated by the MDRS. This would correspondingly increase the risk of adverse reverse sensitivity effects which inhibit Airport operations. This is the key reason why consideration needs to be given to whether the 50dB noise contour should be used to define the qualifying matter, rather than enabling further residential intensification through application of the MDRS.

8. Examples of operational restrictions being applied at other airports in New Zealand, where residential development has been allowed to establish (or was already established) in close proximity, can be seen in Wellington and Queenstown, both of which are now subject to a night-time curfew in order to manage noise impacts on residential communities near the airport.

9. In the case of the current operative contours[3], an expert Panel last reviewed and confirmed the inputs and assumptions in January 2008. At that time, the Panel recommended that the contours be remodelled every ten years. Within this context, policy 6.3.11 of the Canterbury Regional Policy Statement (CRPS) establishes monitoring requirements relating to the development of Greater Christchurch. Specifically, Environment Canterbury (ECan) may request the Airport to undertake a remodelling of the contours. ECan issued that request in September 2021. Christchurch Airport's independent experts (the Independent Experts) have completed that task and the remodelled contours are with ECan under review by a peer review panel (the ECan Review Panel). The review is expected to be completed soon.

10. The Independent Experts confirmed the appropriateness of retaining the 50dB Outer Control Contour (OCB), but provided ECan with two recommended options for consideration; being:

a. A contour based on the busiest three-month period of use on each runway (the Outer Envelope); and
b. A contour based on the annual average runway use (the Annual Average).

11. For the purpose of this report, and to assist with the Council's response to the Enabling Act and the subsequent Intensification Planning Instrument (IPI) process that will follow, the Annual Average Outer Control Boundary (AAOCB) has been chosen as the qualifying matter

[3] 50dB Ldn Air Noise Contour and the 55dB Ldn Air Noise Contour

for assessment. The spatial extent of the AAOCB as it relates to the land covered by the proposed Variation is shown on a map attached as **Appendix One**. The map also shows the existing operative 50 dB contour for context. What is immediately apparent from this map is that the AAOCB is spatially less extensive than the operative contour. It must be noted, however, that while the AAOCB does not cover the eastern section of the Silverstream subdivision that is included under the current operative contour, it does cover additional Silverstream land at the western extent. That additional land, it must be noted, is already fully developed with modern housing stock.

12. While it is accepted that the remodelled contours are yet to be assessed in full by the ECan Review Panel, they currently represent the most up to date research and data on this issue and have been prepared by a panel of independent experts.

13. The reasons for seeking to include the AAOCB to identify where the airport noise qualifying matter applies within the IPI process are as follows[4]:
    a. any rule in a proposed IPI which authorises a residential activity as a permitted activity in accordance with the Medium Density Residential Standards (MDRS) will have immediate effect upon notification;
    b. this would allow building to commence or certificates of compliance to be obtained at the time the MDRS are notified; and
    c. if the Annual Average contours are not accurately identified on the planning maps and included as a qualifying matter, this would allow residential intensification to inappropriately occur in areas exposed to noise levels of 50dB Ldn or greater.

14. It needs to be acknowledged, however, that should the ECan Review Panel recommend the Outer Envelope contour be used for land use planning, or a combination of the Outer Envelope and Annual Average, or variations to either, then a submission on the Council's Variation will be required in order to give the Hearings Panel scope to confirm the correct spatial extent of the qualifying matter within the proposed Plan. It is accepted that this it is not an ideal situation, but it is, unfortunately, a product of the programming of the Variation (as directed by legislation) and the timing of the review of the contours.

15. There is also the issue of whether the existing operative contour should also be considered as the basis for identifying the qualifying matter. In practical terms this issue only arises in Waimakiriri and Selwyn (but not Christchurch City), because the AAOCB is smaller spatially over relevant residential zones when compared to the operative contour. In short, and as noted above, the operative contour does not reflect the remodelled and most up to date noise exposure data. It is acknowledged, however, that ignoring the operative contour potentially raises an inconsistency with the relevant policies of the Canterbury Regional Policy Statement (CRPS) and the operative District Plan. The significant of this issue, however, needs to be considered within the context of why the policy exists and the link to Map A in the CPRS and the contour shown on the planning maps – that being to define the extent of the noise exposure. This issue is addressed in separate advice from Chapman Tripp who cover the fact that there is a timing lag between the legislative requirement to notify the MDRS including identifying existing qualifying matters, and any future change to the RPS to incorporate the updated AAOCB.

16. For completeness, it is noted that The Engine Testing Contours do not extend over any land that is zoned residential within the District.

[4] And as largely outlined in letters prepared by Chapman Tripp dated and supplied to the Council on the 14th and 27th April 2022.

17. This report is in three parts:
    a. **Part A** provides background information about the Air Noise Contours, provides a summary of technical reports which consider the significance of the Airport in an operational, economic and acoustic context, and assesses the planning frameworks.
    b. Given the information and assessments provided in Part A above, **Part B** considers the proposal to include the Air Noise Contours as a qualifying matter within the assessment framework of section 77K(1) of the RMA. This also includes consideration, at a broad level, as to whether the 50dB metric should remain, or whether it should be replaced with a 55dB contour.
    c. **Part C** provides overall conclusions and recommendations.

PART A: THE AIR NOISE CONTOURS

Context

The Proposed Variation

18. The Council has commenced a planning process to respond to its obligations under the Enabling Act and the National Policy Statement on Urban Development 2020 (NPSUD). A Variation to the proposed Plan will be notified in August 2022.

19. In summary, the Enabling Act requires Council to apply medium density residential standards (MDRS) to relevant residential zones in order to enable residential intensification.[5] This has the potential to enable increased density of development on land under the AAOCB, beyond that currently provided for in the operative and proposed District Plans. In many ways, the proposed MDRS are the antithesis of the provisions that unpin the current planning regime designed to achieve appropriate amenity outcomes for residents beneath the contours and to ensure effective and efficient operation of the Airport.

20. Given this, the Council may make the standards less enabling of development (i.e. provide for density at a level lower than anticipated in the MDRS) in a particular area if necessary to accommodate a "qualifying matter". In this case, the protection of residential amenity and airport operations can be considered as an existing qualifying matter[6] required to ensure the safe or efficient operation of the Airport as nationally significant infrastructure for the "effects" reasons summarised above and discussed in more detail below.[7] The location where this qualifying matter applies is the AAOCB.

21. This report provides further analysis to support that position and specifically considers the evaluation requirements of section 77K(1).

Report Outline

22. The balance of this report addresses:

Part A

a. The Role and Significance of the Airport
   - Airport Operations and Safeguarding – Airbiz
   - Airport International and Domestic Freight Tends – Paling Consulting
   - Economic Significance and Vulnerability – Property Economics

b. Aircraft Noise:
   - Aircraft Noise Effects – Marshall Day Acoustics
   - Land Use Planning - Marshall Day Acoustics
   - Community Response to Aircraft Noise and Literature Review – Marshall Day Acoustics

c. The Planning Framework:

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5 Resource Management Act 1991, s77G: inserted by Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021, s9.

6 An existing qualifying matter is a qualifying matter referred to in section 77I(a) to (i) that is operative in the relevant district plan – s77K(3)

7 Resource Management Act 1991, s77I(e): inserted by Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021, s9.

- Canterbury Regional Policy Statement
- The operative Waimakariri District Plan – the policy framework and provisions
- The proposed Waimakariri District Plan – the policy framework and provisions
- Caselaw – the importance of density controls

d. The Variation
e. Conclusions and the planning issues

Part B
f. S77K(I) Assessment, including a section 32 assessment required under section 77K(1)(c)

Part C
g. Recommendations

The Role and Significance of the Airport

Introduction

23. The existing planning framework in the Canterbury Regional Policy Statement (CRPS) and the District Plans recognise the national and regional significance of the Airport.

24. The Airport is essential for transporting people and freight to, from, and around, the South Island. It is an intergenerational asset which connects Canterbury businesses and communities with the rest of the country and the rest of the world. CIA is the largest airport in the South Island and second largest in the country with high volumes of passengers and goods passing through daily.

25. The Airport operates 24/7, and this availability provides a significant operational advantage for the Airport's users and its ability to connect to the rest of the world. Any reduction in that capacity or flexibility would have notable consequences in the Airport's ability to deliver its operational outcomes, and the regional, national and international benefits that arise from that. To a large extent, this is one of the key principles underlying the existing planning framework.

26. To illustrate the significance of the Airport attached, as **Appendix Two,** is a report prepared by Airbiz. The Airbiz report outlines, amongst other things, the general role and key functions of the Airport, and considers the potential impacts of capacity constraints on Airport operations. **Appendix Three** contains a report prepared by Paling Consulting assessing international and domestic freight trends, and **Appendix Four** includes a report from Property Economics that provides the most up to date information on the economic significance of the Airport. The key findings of each report are summarised below.

The Airbiz Report – Safeguarding the Airport (Appendix Two)

Airport Safeguarding Principles

27. Safeguarding an airport and its operations is critical to protect its current and future ability to function efficiently and competitively, and to enable it to continue to serve local and national roles as essential transport infrastructure connecting communities.

28. Urban development encroachment into areas required for airport safeguarding is a "lose-lose" situation (for the airport and community it serves) and is irreversible. It is very expensive, if not impossible to recover land for safeguarding purposes once it has been developed for

urban purposes. A consistent conservative long-term approach is therefore justified and essential.

29. Long term planning frameworks are the key to preserving the economic importance of the Airport and the amenity of residents that live beneath flight paths. Any loosening or gap in airport safeguarding through deficiencies or relaxation of land-use controls will be irreversible. It will result in populations living in areas affected by noise from aircraft operations, or alternatively potential pressure for restrictions on airport operations and prejudice regional and national economic opportunities.

ICAO Balance Approach to Aircraft Noise

30. The International Civil Aviation Organisation (ICAO) establishes policy on aircraft noise, amongst other things. New Zealand is a signatory state to the ICAO. The main policy[8] on aircraft noise consists of four principal elements (pillars), as follows:
    a. Reduction of noise at source;
    b. Land use planning and management;
    c. Noise abatement operational procedures; and
    d. Operating Restrictions.

31. Table 1 on page 5 of the Airbiz report notes that the severity of impact on airport operations increases as options a-d are implemented; noting in particular that operational restrictions can have "high" impacts due to the use of measures that result in capacity restrictions and airline connectivity options. Airbiz notes that:
    a. Potential noise impacts on communities should be avoided by use of the noise reduction and then land use planning and management pillars;
    b. Where these pillars are unsuccessful, or not implemented, then noise abatement operational procedures may need to be implemented through techniques such as preferential runway modes and flight path rotation; and
    c. Operating restrictions are the "last resort" and can include limits on the type of aircraft, quotas for aircraft movements or night movements, or curfews.

32. Airbiz note that the Outer Control Boundary (OCB) regulatory framework described in the NZS 6805 (paragraph 103 below) fits into the land use planning and management pillar and should be considered as a "prevention is better than cure" option.

General Consequences of Inadequate Land Use Protection

33. Throughout New Zealand, the OCB is generally set at 55 Ldn. Airbiz note, however, that NZS6805 allows for greater levels of protection – which, for example, has been found appropriate by decision makers in Christchurch City to date. With reference to the Marshall Day Acoustics reports (**Appendices Five and Six**) and discussed below, Airbiz highlight that evidence demonstrates that significant proportions of populations consider themselves highly or moderately annoyed at exposure levels below 55 dB Ldn.

34. Inadequate land use protection, or the relaxation of existing noise controls, allows noise sensitive activities and urban development/intensification to encroach under flight paths, with associated reverse sensitivity risks to the airport. At section 4 of the report[9], Airbiz provide a summary of five case studies to illustrate the risk. The case studies are:

[8] Balanced Approach to Aircraft Noise Management – paragraphs 24 – 38 Airbiz report
[9] And in full in an Appendix to the report.

a. Melbourne Airport;
b. Calgary Airport;
c. Brisbane Airport;
d. Schiphol Airport; and
e. Toronto Airport.

35. The key findings of the case studies are:
    a. Whatever the metric selected and the position of a noise contour for planning purposes, there are linkages between urban encroachment and pressures to mitigate actual or perceived, current or future aircraft noise impacts through operational restrictions;
    b. No cases were found where regulatory authorities relaxed protection in terms of an OCB equivalent level (e.g. reducing an OCB from 50 to 55Ldn);
    c. Significantly, shrinkage of contours does occur due to periodic modelling updates[10], but subsequent urban encroachment has clearly shown increased pressure for airport operational restrictions; and
    d. Specifically, at each airport:
        - Melbourne – the late introduction of appropriate safeguards allowed urban encroachment around the airport. This has resulted in pressures for operational restrictions. Given this, long-term safeguarding through land use controls needs to be in place early and consistently protected;
        - Calgary – provides an example where effective and conservative land use planning controls and adequate safeguarding principles enabled flexibility for necessary changes to airport operations associated with a new runway and limited reverse sensitivity impacts;
        - Brisbane – despite increasing already substantial buffer zones, the development and operation of subsequent parallel runway and associated flight path changes has lead to adverse community reaction. In response three trial noise-reducing initiatives are underway – two of which could reduce long-term runway capacity;
        - Schiphol – Due to urban encroachment near the Airport, operating restrictions are in place restricting total annual aircraft movements and at night (movement quota). In 2017 this resulted in Singapore Airlines relocating half of their freight operations to another airport; and
        - Toronto – Attempts to retrospectively establish appropriate safeguarding areas around the airport have been difficult to effect, due to lack of early and conservative land use planning controls.

Airport Importance and Potential Impacts of Relaxed Protection

36. The Airbiz assessments highlight the significance of maintaining appropriate airport safeguarding techniques through land use planning provisions. At section 5 of their report, Airbiz assess the potential impacts to the Airport and wider community that could arise from reverse sensitivity effects leading to operating constraints on the Airport. As background to this assessment, Airbiz documents the general role and importance of the Airport, its operations and dynamics, and then considers the potential range of operational constraints that could be imposed and the impacts that arise from that.

37. Christchurch Airport is of significant importance to New Zealand, the South Island and the Canterbury region as an essential transportation connectivity hub and base for all types of aviation activity now and in the future. The Airport has no curfew and is operationally available

[10] For example introduction of quieter aircraft at Brisbane or flight paths at Calgary.

24 hours a day, seven days a week. Its 24/7 availability is a significant operational advantage for the airport's users and the communities they serve.

38. The Airbiz report notes:

a. the importance of the Airport in international air services – passenger and freight;

b. given its proximity to Antarctica, it has international significance in facilitating scientific exploration;

c. the Airport is a nominated "alternate" for Auckland International Airport, able to accommodate wide body aircraft – noting that this is a limitation for other Airports;

d. As the gateway to the South Island, the Airport serves as a regional hub, connecting international and domestic passengers and freight across the South Island;

e. Christchurch Airport provides critical air connectivity for the movement of international air freight into and out of the South Island and New Zealand, linking into international freight hubs in Australia, Singapore, China and the United States;

f. The main runway at Christchurch Airport is the second longest runway in New Zealand at 3,287m, allowing air services by new generation aircraft such as the Airbus A350 and Boeing 787, and the world's largest passenger aircraft, the Airbus A380. These aircraft types are critical to passenger capacity and the supply of capacity for international air freight which travels in the belly-hold of these aircraft or on dedicated freight aircraft;

g. The main runway at Christchurch is the only runway in the South Island capable of servicing these large wide body aircraft types without restrictions. If this runway is consistently not available for use, widebody international aircraft (passenger and dedicated freighters) would need to use runways in the North Island. Therefore, Christchurch International Airport is an essential piece of transport infrastructure for the South Island;

h. In 2019 Christchurch Airport recorded:

- 5,164,504 domestic passenger movements[11] making it the third busiest airport in New Zealand[12] for domestic passengers;
- 105,000 Domestic to International transferring passengers and 245,000 domestic-to-domestic transferring passengers[13], illustrating its key role in regional connectivity for the lower South Island and as a hub for Air New Zealand in the South Island;
- 1,766,937 international passenger movements[14] making it the second busiest airport in New Zealand[15] for international passengers

i. Air freight, small parcels and mail is carried into and out of Christchurch Airport in the belly-hold of commercial passenger operations or on dedicated air freight services;

j. Dedicated air freight or mail services typically occur during the night to enable overnight national delivery of freight and mail;

k. Additionally, there is currently (2022) some domestic heavy freight being carried between Christchurch and Auckland on Air New Zealand's dedicated international freighter operations conducted under the Government's MIAC programme (described later);[16]

[11] Christchurch Airport 2019 Financial Statements

[12] New Zealand Ministry of Transport website - Air and Sea transport - air passengers AR004

[13] CIAL data

[14] Christchurch Airport 2019 Financial Statements

[15] New Zealand Ministry of Transport website - Air and Sea transport - air passengers AR006

[16] Domestic "heavy freight" (heavy freight generally excludes non-perishables or small parcels and mail) is usually carried on trucks over the road network.

l. Christchurch Airport facilitates the transfer of domestic and regional air freight onto international services, supporting industries such as salmon farming from Nelson/Tasman onto international services;
m. In 2019 Christchurch Airport recorded approximately 120,000 international tonnes of air freight and mail. In terms of volume and value, the airport accounts for 14% of all New Zealand's international air freight, making it the second busiest airport [17] in New Zealand for freight and mail;
n. 70% of international air freight and mail was carried in the belly-hold of passenger aircraft and 30% on dedicated international freight aircraft[18]; and
o. Christchurch Airport plays an essential role in local, regional and national disaster management, and is a designated 'Lifeline Utility' in the New Zealand Civil Defence Emergency Management Act 2016.

39. A significant feature of the international services at the Airport is that they arrive from long haul destinations in Asia and short haul destinations in Australia and the Pacific. The arrival and departure times of mid- and long-haul services at the airport are primarily dictated by available slot times, the network schedules and onward connectivity to major destinations at the hub airport overseas.

40. Within this context the Airport can be described as a "slot-taker" in that the scheduled times of arrival and departure at the Airport are often not able to be set to ideally suit local requirements, but rather are dictated by the network operation of the carrier overseas and timing (slot) availability at major overseas destinations.

41. With respect to international freight:
a. the Airport plays a significant role in freight exports, with nearly a quarter (23%) of New Zealand's air freight export value[19] being exported directly from Christchurch Airport;
b. with much of the passenger traffic being discretionary and price sensitive, the ability to access the freight market is important, to contribute to overall air route economics and make international services sustainable for airlines across multiple revenue streams;
c. the Airport plays a significant role in facilitating the supply chain for the export of high-value, perishable and seasonal produce direct from the South Island to international markets. Without the ability to export direct from Christchurch, speed to market would be impacted by the necessity to connect over other export gateways;
d. Due to the reduced belly-hold capacity resulting from the Covid-19 pandemic, capacity constraints have limited air freight supply;
e. recognising its importance, the New Zealand Government has supported international air freight market through the Maintaining International Air Connectivity (MIAC) subsidy scheme, essentially replacing the lost belly-hold air freight capacity with dedicated air freight operations; and
f. MIAC flights operate a triangular routing, coming into Christchurch Airport from Auckland Airport and then out to their overseas destination and back into Auckland, supporting exports from the South Island to international markets. This includes night-time freight operations.

42. While the above generally describes scheduled operations, the Airport also caters for non-scheduled operations, including:
a. aircraft repositioning – this usually occurs at night;

[17] Airbiz analysis of New Zealand Ministry of Transport website Air Freight statistics for FY18
[18] CIAL data
[19] Airbiz analysis of New Zealand Ministry of Transport website Air Freight statistics for FY18

b. aircraft maintenance at the Air New Zealand maintenance base;
c. military, government, and Antarctic operations;
d. air ambulances, charters, business jets and small commercial operators;
e. flight training schools; and
f. helicopters – regional rescue helicopters, training providers, maintenance facilities and tourism and agricultural services.

43. Airbiz have identified a range of potential capacity/timing constraints that could be imposed on the Airport should communities within the AAOCB successfully lobby for operational restrictions. This includes:
a. at the higher end of restrictions are night-time curfews to all or specific operations (typically between the hours of 11pm and 6am);
b. annual aircraft movement quotas or caps;
c. daily or hourly aircraft movement caps restricting the number of arrivals or departures;
d. preferential runway regimes (rotating use of runways and associated flight paths to "share" the noise burden) which are often "sub-optimal" in terms of runway or airspace capacity;
e. development of additional runways to cater for air traffic growth, to ensure no additional noise burden is placed on current flight paths; and
f. other noise abatement and mitigation (noise charges, aircraft auxiliary power unit restrictions etc).

44. Overall, Airbiz state that if the above examples are imposed, it will reduce operating efficiency at the airport and impose restrictions (several extremely serious) on the existing operations. At section D of the report, Airbiz provide some practical examples of how these constraints could manifest at the Airport for commercial scheduled passenger flights, as follows:
a. Night-Time Curfew:
- Its role as a nominated alternate airport would possibly change;
- Reduced overall runway capacity;
- Restrictions on future opportunities for international services;
- Impacts on the viability of mid to long haul routes;
- Impacts on the scheduled China Southern flight from Christchurch to Guangzhou;
- Possible reductions, rescheduling or cancellation of early morning trans-Tasman departures; and
- Possible reductions, rescheduling or cancellation of late-night trans-Tasman arrivals.

b. Annual Movement Quota:
- Constraints on airlines volume of frequencies, resulting in sub-optimal outcomes such as requiring a more complex fleet with higher seating-density aircraft, which may not be economic to operate.

c. Daily or Hourly Movement Quota:
- An hourly movement quota, if reached, would impact air services if airlines were not able to schedule aircraft to meet passenger demand. An example of the impacts of an hourly quota occurs at Sydney Airport. The quota includes an allocation to accommodate regional services, which then restricts the number of services which can operate on interstate and international routes. This has partly lead to the need for a new airport in the region.

d. Preferential Runway Regimes (PRR):
- PRR distribute air traffic across an airport's runways and associated flight paths in order to "share" noise. This often results in sub-optimal use of runways and/or airspace capacity, and increased operational costs on ground.

45. For **Airfreight and Mail**, Airbiz note the following:
    a. Night-Time Curfew:
        - As domestic freight services fly overnight, linking domestic ports nationwide, the entire national air freight network would be impacted if Christchurch was effectively removed;
        - The entire air freight supply chain utilising Christchurch is linked to intermodal road and rail connections, which facilitates next day delivery. A curfew would be highly detrimental to the freight supply chain;
        - Domestic "just in time" (e.g. flowers and seafood) impacts would arise for multiple industries if they could not be freighted in overnight for early morning distribution;
        - The export market for high-value, perishable produce may be impacted; and
        - Potential constraints on incoming new/seasonal freight services in the future.
    b. Annual Movement Quota
        - The domestic air freight network is successful because it connects multiple ports, generating multiple movements. A cap on annual movements creates pressure between scheduled passenger flights and freight operators as they compete for movement allocations – the Schiphol example given above; and
        - International air freight at Christchurch airport is seasonal – being the export of summer fruit on dedicated freighter services from December to February. On an annual basis, the flight volume is small, however, the economic significance is high in facilitating direct export of South Island produce. Airbiz note that examples at other airports globally have been detrimental to such freighter services.

46. For **Fixed Base Operation (FBO) and Small Commercial**:
    a. Night-Time Curfew:
        - Air service activities for air ambulance and medivac purposes are critical, and would be compromised by a curfew even if they were able to land or take off at Christchurch with a dispensation; and
        - Small commercial air operators and FBO's have a degree of inter-dependence and benefit from clustering. Some businesses would be compromised by a curfew and may choose to relocate and that may impact on the economic viability of those not impacted by a curfew.
    b. Annual Movement Quota:
        - Flying schools and helicopter operations generate high volumes of movements. A quota may put pressure on these businesses to move away as they compete for movement allocations with scheduled passenger and freight services.
    c. Daily or Hourly Movement Quota:
        - As above.
47. **Airline Repositioning and Maintenance**:
    a. Night-Time Curfew:
        - Late night repositioning of aircraft for maintenance or repositioning would be restricted, meaning aircraft may have to be repositioned earlier in the day, potentially removing an aircraft rotation over the day and reducing passenger flight choice.
48. **Military, Government and Antarctic**:
    a. Night-Time Curfew:
        - These services are critical. Overnight and early morning operations would be stopped, reducing flexibility for Antarctic operations, reducing opportunities to

operate to avoid unsuitable weather and meaning that services could not arrive early in the morning.

Overall Conclusions

49. Airbiz notes the significance and importance of Christchurch Airport in international and domestic passenger travel and freight movements, and the interconnectivity between domestic and international networks. In particular, Airbiz highlights the commercial international passenger "slot taker" restrictions and the significance of the domestic multi modal night-time freight network. Airbiz also outlines the importance of Christchurch Airport in aircraft repositioning, aircraft maintenance, military, government and Antarctic operations, air ambulance, medivac and small commercial operators, and with flight training services.

50. Given the significance of those networks and the extent of some of the operational limitations, Airbiz highlights that "safeguarding" is a critical concept in protecting airport functionality and efficiency; not only in terms of current operational capacity, but also for the future. Within this context Airbiz notes the main policy of the ICAO and the four "pillars" for addressing aircraft noise, and notes that addressing noise at source and land use planning tools are preferred to noise abatement operational procedures and operating restrictions. In particular, operating restrictions should be viewed as the "last resort" as they will impact on the functionality of the airport and have adverse downstream economic, passenger, freight and other outcomes.

51. Robust planning provisions are, therefore, viewed as the least risk outcome for airport operations and the community as a whole, providing certainty and long-term risk avoidance.

52. To illustrate the risks to airports and communities sitting beneath flight paths in real world terms, Airbiz provides 5 case studies illustrating the adverse results arising from a lack of or late adoption of safeguarding principles. From this, Airbiz illustrates a range of operational restrictions that could be imposed following community pressure to manage the effects of overflying aircraft, including curfews, quotas or caps and preferential runway regimes. The direct potential impact of such restrictions on Christchurch Airport are then outlined in the last section of the Airbiz report.

53. Overall, the Airbiz assessment and findings support the application of the AAOCB as a qualifying matter within the proposed Variation to the proposed Plan.

The Paling Report – International and Domestic Freight Trends (Appendix Three)

Introduction

54. The Richard Paling Consulting (RPC) report provides an overview of the economic role of the airfreight operation at the airport, including consideration of past trends, implications of the Covid-19 pandemic, and future projected trends. The key points and findings of this report are summarised below.

Role of the Airport in freight

55. CIA is the second largest international airfreight gateway in New Zealand, and the only one providing direct links to overseas destinations for those wishing to ship goods by air to or from the South Island. Both the value and volume of airfreight is focussed on in the RCP report, with the key aspect of airfreight being that this is primarily used for smaller goods with high

values. Air freight through CIA makes up around 0.2% of the volume of freight entering the South Island, with the remaining volume transported by sea.

56. The total value of goods (almost $3 billion in 2021) makes the Airport the second largest South Island import gateway after the Port of Lyttleton, and the third largest South Island export gateway after Lyttelton and Port Chalmers.

57. The Airport provides for both international and national airfreight, with those streams focussed as follows:

a. **International Airfreight:**

- Export of time sensitive premium agricultural products[20] from South Island producers to a range of international markets (especially in Australia, China, South East Asia and the US). Alternative transit modes would prevent or severely limit the sale of these products; and
- Exports/Imports of high value manufactured goods supporting local industries both for exports and imports of time-critical materials (including Hamilton Jet engines and parts) and also the movements of goods to consumers from overseas suppliers.

b. **Domestic Airfreight**

- An important staging point for e-commerce, courier movements and mail, acting as a distribution centre for items delivered to South Island destinations and also as a consolidation point for those moving to North Island destinations.

Growth of International Airfreight

58. The RPC report (section 2) summarises the growth in the period up to 2019, where the total value of international trade carried by airfreight had been increasing strongly. Between 2014 and 2019, international trade imports had increased from $0.6bn to $1.5bn (a 150% increase), and exports doubled from $1.5bn to almost $3bn.

59. Up to 2019, the trends regarding the contribution of airfreight through the Airport included a domination by export traffic (both by value and volume), increase in value of exports and imports, and an increase in proportion of freight within the South Island. After growing for much of the period from 2015, export and import volumes declined slightly in 2019, indicating a switch to the carriage of higher value commodities.

60. Section 3 of the RPC report reviews the airfreight during 2019. This was the last normal year prior to the Covid-19 pandemic and represents the most recent position from which to consider future trends. The general position of the Airport's international trade at the time is summarised as follows:

a. The value of international trade was around $4.4bn, or 17% of total international trade into the South Island. Of this figure, imports comprised around $1.47bn (19%), and exports around $2.7bn (16%). Imports therefore represent 33% of the value of freight, and exports dominant with 67% of value;
b. The volume of exports was around 20,000 tonnes, with imports of around 9,000 tonnes;
c. The dominance of exports is attributed to the nature of the South Island economy with its focus on producing goods (primarily agricultural commodities) for overseas markets;

[20] These products include fresh and live fish, horticultural products such as cherries and other stone fruits and fresh and chilled meat.

d. Airfreight has a high share of the value of international trade, and this highlights its importance in supporting economic activity, getting time-sensitive high value goods to overseas markets and bringing in supplies for local industries and consumers;
e. When individual commodities are grouped, exports comprised of 74% agricultural products[21] followed by manufactured goods[22] (19%), basic materials (6%) and precious metals (1.3%). Imports comprised of 57% manufactured goods, followed by basic materials (24%), agricultural products (19%) and precious metals (0.3%); and
f. In terms of the destinations and origins for international airfreight by volume through the Airport, Australia is the most important destination for exports followed by China, and the US.

61. Overall, exports are considerably larger than imports in terms of volume and value. Exports are more likely to be constrained by the absolute volume of airfreight capacity that may be available. Imports are less likely to be affected by a lack of total capacity.

62. Section 4 of the RPC report discusses the Covid-19 impacted years of 2020 and 2021, noting the associated restrictions and lockdowns affecting economic activity and trade, and resultant changes in patterns of aircraft activity through CIA. This included a:
a. Downturn in international passenger flights departing;
b. Increase in freight flights, from 261 (in 2019), to 290 then 535 in 2020/2021;
c. Overall, the reductions in passenger flight frequency resulted in less flexibility for airfreight, and connections constrained to particular days (passenger flights) or freight only aircraft;
d. The corresponding increase in freight flights (in part government subsidised) assisted with maintaining the service, however frequency (overall) fell sharply; and
e. Volumes of exports initially reduced in 2020 by around 20%, however then increased in 2021 to 95% of 2019 volumes. Imports increased by around 55% in 2020, with a very small increase from that in 2021. Value dropped by around a third from 2019 to 2020, with a slight increase in 2021. The patterns of change to the volumes and values of exports suggest significant changes in the unit values of commodities exported by air. Import volumes/values indicated a more consistent price.

63. The reduction in the range of services experienced during 2020 and 2021 appears to have limited the ability for both exporters and importers of high value manufactured goods to take advantage of the time savings achievable with air freight, with declines in both the volumes and values of these commodities. This decline has occurred despite the growth of the regional economy and highlights the importance of a wide range of air services capable of carrying freight to support this part of the airfreight market.

Future Projected Growth

64. The RPC report highlights that there might be two main components to supporting air freight services, as follows:
a. Supporting agricultural production in the region by providing enhanced access for premium products to the key markets in Australia, Asia, the US and Europe. Of particular importance is the high volume of agricultural products looking to access premium markets around the world where the timing of services and speed of delivery are critical; and
b. Providing for the rapid movement of manufactured and other inputs for industries in New Zealand and overseas and also providing facilities for the movement of consumer

[21] Fish, meat, processed food, horticultural items and dairy
[22] Including pharmaceuticals, vehicles and textiles.

goods for consumers in New Zealand. This component dominates where access to and from a wide range of origins and destinations is the important factor.

65. Other key aspects of forecast growth that are outlined in section 5 of the RPS report include:
    a. The Airport provides the main direct access to international markets for manufactured goods, with the airport providing 70-80% of the combined volume of manufactured goods exports from both the Airport and Lyttelton Port. This proportion was increasing steadily up to 2020. The overall share of freight undertaken via the Airport is lower at 25-35%;
    b. A 2018 study[23] provided a detailed snapshot of freight in NZ for the main domestic modes and provided data for a 'MOT Freight Futures Model' allowing forecasts for growth of freight for a range of commodities, and international freight flows through Port of Lyttelton;
    c. Although the model focusses on domestic transport in New Zealand and the role of the Port of Lyttelton, and not small volumes of freight via airfreight, the forecasted growth at Port of Lyttelton is likely to be linked within increased demand for international airfreight to and from the Airport;
    d. As well as gaining from the general growth of overseas markets, airfreight provides opportunities for increasing value-added elements within commodities; and
    e. Commodities exported by air have a significantly higher value than the value of those exported by sea – primarily for perishable products. The growth of the value of airfreight to 2019 reinforces that finding.

<u>The future role of Christchurch International Airport</u>

66. Section 6 of the RPC report discusses the likely future role of CIA with regard to international airfreight, on the basis of recent and forecast trends for imports and exports. Of note is:
    a. there is likely to be growing demand for airfreight as the regional and South Island economies continue to grow following the COVID-19 pandemic, and as the use of airfreight becomes increasingly attractive for the transport of the growing share of premium agricultural products. The latter will often require flight timings that allow the products, in many cases fresh or chilled, to be brought to markets in the destination countries at a time that meets the patterns of consumer demand;
    b. The supply of airfreight capacity through Christchurch is broadly in line with the longer-term trends in demand, especially for exports. However, this reflects the current support provided by the New Zealand government which is likely to be withdrawn as passenger flights become more frequent. Any constraints on passenger services providing airfreight capacity could affect the agricultural sector adversely;
    c. Air freight also needs to meet the broader demands for the movement of manufactured goods both exported from and imported to New Zealand. These products are typically of high value, which reflects their importance to manufacturing and retail activities, and make up a large part of the inward and outward airfreight market;
    d. Issues with capacity and the specific timing of services is probably not such an issue for manufactured goods, however services to and from a range of overseas locations at a variety of times would be important; and
    e. CIAL's observed and forecast international aircraft movements (both passenger and freight) through CIA indicates that by 2027, the numbers of international flights could have recovered to pre-pandemic levels. With reasonable route coverage at sufficient frequencies, this would facilitate the growing demands for airfreight to and from the area, allowing the local and wider economy to receive the full benefits by the later part

[23] 2018 National Freight Demand Study

of the decade, and provide the basis for the forecast continuing growth over the longer term.

Domestic Freight

67. The RPC report notes that Christchurch is an important staging point for e-commerce, courier movements, and mail within NZ, acting as a distribution centre for items delivered to South Island destinations and also as a consolidation point for those moving to North Island destinations. There is a large proportion of goods requiring overnight deliveries, with goods despatched from businesses at the end of the working day and delivery to major centres by the next morning.

68. The rapid growth of e-commerce also includes increasing volumes of goods being delivered directly to customers, with expansion both before and during the Covid outbreak. In New Zealand the retail expenditure via e-commerce is around 11% of total retail sales, with figures of over 20% in the US and UK. This indicates the potential scope for expansion if NZ were to align with trends in comparable countries.

69. The figures in Table 7.1 in the RPC report indicate that total volumes of manufactured and retail goods transported into and out of the Lower South Island are expected to increase substantially over the period to 2052. The future growth in e-commerce is likely to be sustained and substantial.

70. Parcelair provides the freight service for domestic e-commerce market in the South Island, supporting NZ Post and Freightways, providing a consolidation of operations. This service operates overnight with a snapshot of an overnight period in March 2022, where the Airport provided for 16 arrivals/departures between 17.30hrs and 8.10hrs. The flights are spread over a wide period to meet the main demand from clients and allows for the volumes of goods to be sorted, contributing to an efficient supply chain. Of note is that 9 arrivals/departures occurred between 2305 hours and 0330 hours.

Summary

71. The RCP report concludes that the Airport plays an important role in the movement of both international and domestic airfreight, which is important to the local, regional and South Island economy. The demand for airfreight is projected to grow, as conditions recover from the pandemic challenges during 2020 and 2021.

72. International air freight capacity will largely be addressed with the increased range and frequency of passenger services, however as the Airport is a service taker for these operations, it is important that there are as few constraints as possible placed on these services, if the full benefit to the local and wider economy are to be achieved. This may include:
    a. Flights arriving and departing within night-time hours, for both international and internal freight;
    b. A wider range of services to a range of destinations for imports and exports of high-value manufactured goods, and for international e-commerce for NZ consumers; and
    c. Careful timing of the flights would provide suitable avenues for the export of time-sensitive agricultural products, allowing goods to reach markets at appropriate times.

73. Christchurch is located in a strategic position, at the centre of the South Island and at the junction of road and rail links to the north, south and west. Christchurch also acts as the major distribution centre for the South Island as a whole, supporting businesses and consumers in

general with the efficient moment of goods, and simplification of supply chains. This may reduce the amount of handling between supplier and customer, compared to what would be required if airfreight had to be routed through alternative locations.

74. For both international and domestic airfreight movements, the ability to work with as few constraints as possible through the night is important. This would help ensure that the maximum benefits are obtained from the movement of airfreight and its support for local industries and consumers.

Overall Conclusions

75. The RCP report demonstrates that there needs to be flexibility for the Airport's operation in the future, to ensure that airfreight services can expand as necessary in response to projected future increases in demand. This may arise from increase in the use of e-commerce or from the export of (for example) manufactured goods, and agricultural and horticultural goods, including value-added commodities within that sector.

76. Passenger services play a key role in the distribution of freight, and the timing of such services is often determined by others (the international "slot taker" issue discussed earlier). Such services are anticipated to increase to pre-covid levels by the end of the 2020's. Freight-only flights are presently subsidised and may initially reduce once the government subsidy is removed. Freight only flights may be an option for the expansion of freight operations in the future.

77. Strategic timing for the departure of flights is key for the international freight of time-sensitive agricultural products, which are then able to quickly enter overseas markets, and ideally departure times can tie to the required arrival time at the appropriate part of the day for the receiving market. High value manufactured goods do not have the same time pressure. It is, however, important that those are able to be received and distributed widely, and reasonably rapidly.

78. The RCP report highlights that freight passing through the Airport is typically of high value per volume, and this complements the Port of Lyttelton operations, where volume of freight is substantially higher, however the value per volume is lower. This highlights the importance of airfreight as a valued option for the distribution of high value goods, for both import and export operations.

79. Overall, it is necessary for airfreight services to have the option to expand to meet potential future demands, thereby supporting the economy.

The Property Economics Report – Economic Impacts of Operational Constraints (Appendix Four)

Introduction

80. The Property Economics (PE) report provides an assessment of the potential economic impacts associated with enabling noise sensitive activities within the noise contours. The key points are summarised below.

81. Christchurch Airport:

a. is the second largest airport in New Zealand and represents nationally and strategically significant infrastructure supporting national accessibility for passengers and business that supports economic well-being well beyond the borders of the Canterbury Region;
b. it fulfils an extremely important and unique role for the Canterbury regional community. It serves not only as a significant employer for the region but also as a conduit for visitors and commerce into the region. This importance goes beyond national and international passenger transportation and includes air freight, Antarctic operations, disaster response and recovery, helicopter operations, flight training, maintenance, is a significant business location, and provides for flights that are unable to land elsewhere in New Zealand due to delays and other operational restrictions; and
c. its function goes beyond its own direct operations and includes safeguarding other airports, such as Auckland, when acting as an alternate if aircraft are unable to land there. This provides improved competitiveness and resilience for the New Zealand air transport market.

Freight

82. In terms of freight:
a. the Airport plays a fundamental role in the shipping of goods and, therefore, is critical to the economic and social well-being of all residents within the South Island;
b. in 2019 the Airport moved (imports and exports) approximately 5,952 tonnes of manufactured goods (20% of the total moved in New Zealand) valued at over $3.5b;
c. in 2019 the Airport was responsible for exporting over $3b of cargo to other ports; and
d. this has huge positive flow-on effects through the rest of Canterbury's economy with 'off' airport jobs such as storage and transportation directly linked to these volumes. The ability of CIA to move these large valuable cargos is vital for Canterbury, and in fact the South Island, to remain competitive in the location of large, high value exporters and manufacturers.

Passengers

83. With respect to passengers:
a. in 2019 the Airport catered for over 10,800 international passenger flights;
b. following COVID-19 and by 2027 these numbers are expected to re-establish;
c. in 2019 there were 7 million international passengers, and this is expected to increase to nearly 9 million passengers per annum by 2031;
d. visitors originating at the Airport bring with them over $1b to the region with, significant flow on effects from this spending; and
e. the current and future functionality of the Airport is key to not only the Canterbury economy but to that of the whole South Island.

Employment

84. The Airport directly employs over 200 people, generating $187m in revenue. While this alone would identify the Airport among Canterbury's largest business contributors, the economic activity facilitated makes it one of the largest single contributing strategic assets in the South Island.

85. Additionally, over 7,000 jobs[24] are accommodated within the Airport campus, making it one of, if not, the largest employment centres in the South Island.

Regional and District Prosperity and Economic Wellbeing

86. The level of both passenger and freight numbers have fallen sharply over the last two years (with Covid). The numbers are, however, expected to rebound strongly. Given this, the ability for the Airport to meet future growth demands is critical to attracting and locating to the region many national and international businesses that would not otherwise situate themselves in Canterbury. Within this context it is imperative that the ability for the Airport to grow efficiently is protected, as safeguarding growth is not just in the interest of the Airport but has a vital flow-on benefit for the whole community.

87. In terms of the Airport's economic contribution:
    a. in 2012 it was estimated the Airport contributed $2.13b to the regional economy;
    b. by 2017 this figure had risen to $2.62b;
    c. over the next 3 years (the pre-COVID-19 year ended March 2020) this figure is estimated at $3.02b per annum; and
    d. the Airport supports 28,625 jobs within the region (10% of Canterbury's employment) and contributes $4.76b (7%) to South Island GDP.

Potential Impacts on Airport Operations and Economic Contribution

88. There is a direct link between management through land use planning and the level of economic contribution provided by efficient operations at the Airport. Ultimately the Airport is vulnerable to operational constraints that would reduce its flexibility. When considering the potential application of a curfew, PE note that:
    a. recent assessments of Perth Airport found that a night-time curfew could cost the Western Australian economy $46.1b and 27,000 jobs by 2040; and
    b. more extreme noise management constraints such as those at Rotterdam Airport have decreased passenger numbers by over 60%.

Potential Economic Risks to Airport Operations and the South Island Economy

89. PE note that the imposition of a curfew has potential notable impacts; including:
    a. post COVID recovery – the potential for reduced connectivity through the Airport is likely to hamper freight and passenger movements resulting in increased costs and reduced economic benefits;
    b. given the Airport's role as a "slot taker", a curfew could reduce the range of destinations connecting to Christchurch and thereby reduce the markets from which Christchurch can attract tourists as well as trade and business development;
    c. airlines may also choose to locate aircraft elsewhere given the reduced competitiveness at CIA. Limitations of night-time movements on aircraft can limit the crafts ability to be prepared for use. This would reduce the number of flights and the overall utilisation of aircraft;
    d. The limitation of night-time air freight movements is also likely to reduce craft utilisation, increasing costs and route profitability. The impact on freight is not limited to volumes but also around time-critical or 'just in time' operations;
    e. Long term loss of investment and business. Long term effects on investment could further reduce the ability of CIA to undertake current or future levels of operation; and

[24] Statistic New Zealand Employment Count

f. In terms of the wider impact on business investment, the reduction in transportation options is likely to impact upon businesses locational decisions, at this point the loss to the region is likely to be materialised as a loss to the whole South Island.

90. It is estimated that with the proportional increase in freight and the increased passenger numbers the contribution to regional GDP made by CIA has the potential to exceed $3.87b by 2031. This level of contribution at the South Island level would constitute economic activity circa $6b per annum. Based on a number of stated assumptions[25] relating to constrained operations under a night-time curfew it is estimated that were the region to forgo the economic activity generated from the state assumptions alone by 2031 this would equate to:
   a. $610m annually, and $835m per annum in forgone economic activity for the South Island;
   b. approximately 4,000 jobs regionally and 4,600 throughout the South Island; and
   c. Given this value is based on an annualised figure, the overall impact to 2031 (from 2022) would be in excess of $4.8b.

Aircraft Noise

Introduction

91. Airport operations create unavoidable noise. Control of noise sensitive land uses (including residential activity) within the AAOCB is important to:
   a. ensure people are protected from establishing sensitive land uses in areas that are exposed to levels of aircraft noise which might disturb them or affect their quality of life resulting in adverse amenity and health outcomes; and
   b. protect the Airport from reverse sensitivity effects, enabling airport operations to continue to support and benefit communities.

92. Density control is a key planning tool used in District Plans to achieve the above outcomes. Residential density rules directly affect the intensity and development of new residential land use. The proposed MDRS focus on achieving densification through the application of more flexible development standards. By way of example, and within a Kaiapoi context, the number of units (and therefore the number of households) allowed per site are directly relevant to the Airport noise issues.

93. Within this context, it is appropriate to ensure that District Plan standards applying to development beneath the AAOCB do not give rise to increased density that would lead to adverse amenity outcomes or reverse sensitivity impacts on the Airport. To explain this further, attached, as **Appendix Five**, is a Memorandum dated 8 July 2022 prepared by Marshall Day Acoustics (MDA) which explains the key acoustic reasons for controlling density beneath the contours. Related to this, the report outlines the research undertaken regarding community responses to airport noise. **Appendix Six** contains a report from MDA that examines what level of aircraft noise exposure is reasonable (50 or 55 as an outer control boundary). Finally, **Appendix Seven** contains an additional Memorandum that examines community response to Aircraft noise. There is some cross-over in the effects related discussions in each report.

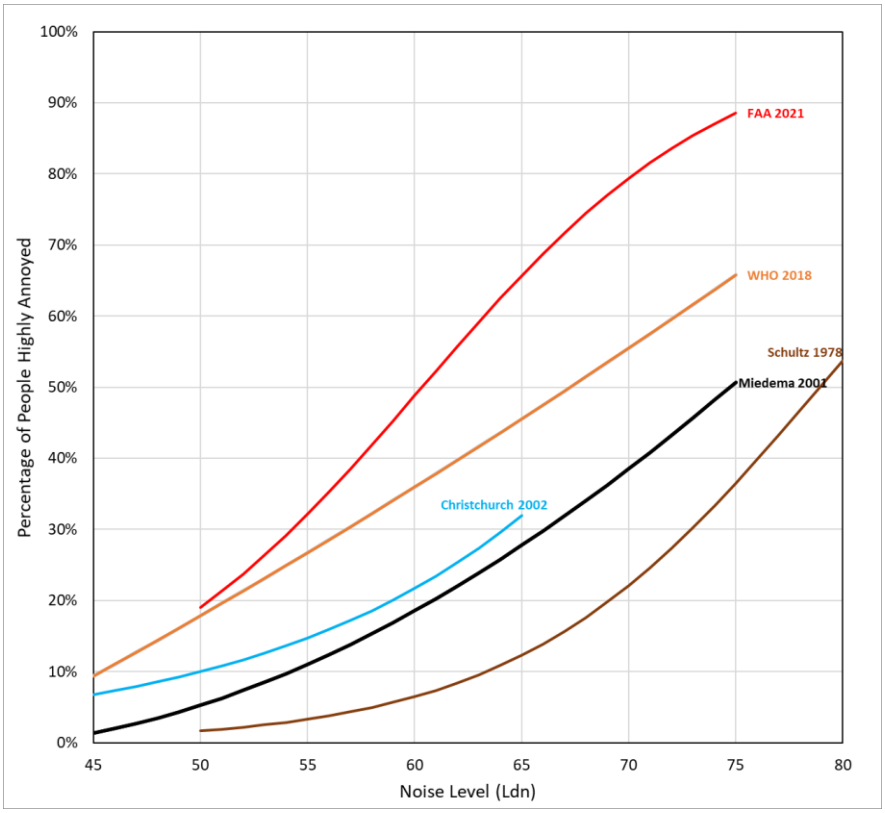
[25] Page 15 of the PE report

Marshall Day Acoustics – Noise Effects (Appendix Five)

94. MDA note the relationship between residential density and exposure to aircraft noise and how this leads to adverse health and amenity impacts on communities. MDA highlight that with increased density comes the risk of complaints and community pressure to curtail airport operations. To illustrate this point MDA provide data from Boeing that illustrates an increase in airport operational constraints over time, despite the fact that aircraft have become quieter due to advances in technology.

95. To avoid this occurrence, MDA promote the use of a 50dB outer control boundary contour (and related provisions) as the most effective and efficient planning tool and note the existing regional and district planning framework (discussed below) to avoid sensitive activities within the Contour. Notably, MDA are of the view that (emphasis added):
Aircraft noise inside the 50 dB L_{dn} contour causes adverse effects on people and this is not a desirable noise environment in which to increase residential density. Accordingly, it is preferable to avoid noise sensitive activities from locating in areas where they will experience adverse effects from aircraft noise from the outset. Sound insulation or other types of mitigation will not fully avoid adverse effects of noise on occupants. Where there is alternative land outside of the noise contours available to locate residential intensification, this should be preferred.

96. Within this context MDA note the long-term reliance on the Miedema and Oudshoorn 2001 dose-response curve and a 2002 Taylor Baines and Christchurch City Council study which illustrates "high annoyance" levels for communities between the 50 and 55dB Ldn ranging between 5%-11% and 10%-15% respectively. More recent research undertaken by the World Health Organisation (2017) and the FAA (2021) found higher levels of such annoyance ranging from 18% to 32% for communities receiving aircraft noise levels between 50 and 55dB Ldn. This is illustrated in a graph (Figure 2) contained in page 3 of the MDA report and reproduced below.



97. MDA argue that the more recent studies suggest that *"in order to minimise the number of highly annoyed people, a level of 45 dB L_{dn} is required which is 10 dB lower than recommended by the Standard, and 5 dB lower than the current OCB that exists at Christchurch."*

98. Furthermore, MDA are of the view that (emphasis added):
Both the Christchurch data and the latest overseas data confirm that, at 50 dB L_{dn} and above, some of the population will be highly annoyed by aircraft noise. This is not a desirable noise environment in which to locate additional residential development (or intensification) if it can be easily avoided. The latest overseas studies confirm that community tolerance to aircraft noise is likely reducing, not increasing.

99. MDA note that:
If greater levels of intensification than permitted in the operative District Plan were allowed to occur in the residentially zoned areas inside the 50 dB Ldn Air Noise Contour, then an increase in the number of people highly annoyed would be expected to occur. Planning rules that allow for high density residential activity to establish as of right … will then expose more people to adverse effects from aircraft noise.
It is therefore appropriate, from an acoustics perspective, to prevent development and intensification within the 50 dB L_{dn} Air Noise Contour in order to protect the health and amenity of the community, as well as the operations of CIA.

Marshall Day Acoustics - Land Use Planning (Appendix Six)

Introduction

100. Marshall Day Acoustics (MDA) have prepared an overview report of the land use planning framework influencing noise contours[26]. As noted earlier, there is some cross over in the material contained in this report and the July Memorandum summarised above.

101. A key aspect of this report is MDA's assessment of what level of aircraft noise exposure is reasonable.

102. By way of introductory comment, MDA note that:
a. World-wide, the lack of appropriate land use planning around airports has historically caused significant numbers of people to be exposed to airport noise and subsequent community action has initiated operational constraints on airports;
b. The adverse noise effects experienced around the Airport include annoyance, speech interference, sleep disturbance and potentially health effects associated with annoyance;
c. If land is available elsewhere for new residential (or other sensitive activities) development or intensification, this should be preferred to land within the 50 Ldn contour; and
d. Specifying sound insulation for activities between the 50 and 55 contour will not eliminate all the adverse effects of noise, due to open windows and an unsatisfactory noise environment.

[26] This includes a discussion on the former Waimariri District Plan which is not relevant to this assessment

New Zealand Standard NZ6805

103. In 1992, the Standards Association of New Zealand published New Zealand Standard NZS 6805:1992 "Airport Noise Management and Land Use Planning" with a view to providing a consistent approach to noise around New Zealand airports. MDA note the following key points:

a. The Standard uses the "Noise Boundary" concept as a mechanism for local authorities to:
   - "Establish compatible land use planning" around an airport; and
   - "Set noise limits for the management of aircraft noise at airports"

b. The Noise Boundary concept involves fixing an Outer Control Boundary (OCB) and a smaller, much closer Air Noise Boundary (ANB) around the airport;

c. Between the ANB and the OCB new noise sensitive uses should also ideally be prohibited (and of those that are required, all should be provided with sound insulation);

d. The location of the OCB is generally based on the projected 55 dB L_{dn} contour;

e. The Standard does however state that the local authority may show "the contours in a position further from or closer to the airport, if it considers it more reasonable to do so in the special circumstances of the case";

f. The Canterbury Regional Council, and therefore Christchurch, Waimakariri and Selwyn Councils have used the 50 dB L_{dn} contour for the location of the OCB;

g. The Standard recommends that a "minimum of a 10-year period be used as the basis of the projected contours"; and

h. It is important for a major international airport to plan for a period significantly longer than 10 years

104. Overall, MDA note that Land Use Planning can be an effective way to minimise population exposure to noise around airports. Aircraft technology and flight management, although an important component in abating noise, will not be sufficient alone to eliminate or adequately control aircraft noise. Uncontrolled development of noise sensitive uses around an airport can unnecessarily expose additional people to high levels of noise and can constrain, by public pressure as a response to noise, the operation of the airport.

What Level of Aircraft Noise is Reasonable – 50 or 55

105. MDA note that community response to aircraft noise is a "grey scale" and that annoyance does not start or stop at a specified noise level (or contour boundary). For planning controls, however, it is necessary to establish a specific noise level. MDA are of the view that a 50dB Ldn control is appropriate as:

a. 50dB Ldn has historically been used at Christchurch since 1975, including within the 2008 review, and more recently within the Waimakariri District;

b. NZS 6805 recommends that existing noise controls should not be downgraded:
   - Clause 1.1.4 of NZS 6805 states that "This Standard shall not be used as a mechanism for downgrading existing or future noise controls…";
   - NZS 6805 is very much recommending a <u>minimum</u> level of protection with its use of Ldn 55 dBA as the Outer Control Boundary. The Standard states in clause 1.4.3.8 that the local authority may show "the contours in a position further from, or closer to the airport, if it considers it more reasonable to do so in the special circumstances of the case"; and
   - The NZ Standard clearly envisages that a better standard of protection than the 'minimum standard' may be implemented somewhere in New Zealand – otherwise it would not have these words in clause 1.4.3.8 of the Standard.

c. World-wide, community annoyance from aircraft noise has increased significantly since these controls were first introduced:
   - Establishing a link between aircraft noise effects and how a community may respond to that is important, as without that relationship it may be difficult to conclude that pressure may be applied to limit capacity and operations at an airport;
   - In the 1970s, the Schultz curve was developed from a number of studies in general transportation noise (included air, road and rail). Later analysis by Bradley of airport studies indicated that community response is greater than the Schultz curve predicts by a factor of approximately two. The Schultz and Bradley results were used during the preparation of New Zealand Standard NZS 6805;
   - A comprehensive amalgamation of the various airport noise studies was carried out by Miedema and Oudshoorn in 2001[27] and the dose-response curve from this study has been used internationally and in New Zealand since then;
   - In 2002, Taylor Baines & Associates and Marshall Day Acoustics[28] conducted a noise annoyance survey in Christchurch. The study was conducted to investigate how the Christchurch community responded to environmental noise when compared to the previous overseas studies (Schultz, Bradley and Miedema);
   - There have also been a number of international studies that have been undertaken more recently in the 21st century. MDA has recently completed a literature review (**Appendix Seven**) of 45 of the latest studies. A summary of the 14 most significant studies shows:
     - 6 reported an increase in noise annoyance over time (FAA, Guski x3, WHO, Janssen and Vos)
     - 1 reported a decrease (Vietnam)
     - 4 reported no change (Gjestland x 2, Fidell, Gelderblom)
     - 3 did not report on a change (NZTA, Brink, Gjestland 2021)
   - The two largest studies in this set of studies, were the World Health Organisation (WHO) study in 2018 and the Federal Aviation Administration (FAA)[29] study in the US in 2021 – both show a significantly higher level of annoyance than the Meidema 2001 dose response curve. The dose response curves from these studies are shown the figure above at paragraph 91, along with the Miedema and 2002 Christchurch study for comparison.
   - The clear conclusion from these recent studies, is that community annoyance from aircraft noise is significantly higher today than the results 20 to 40 years – which were used to develop the recommendations in NZS 6805; and
   - Based on these results it would not be sensible to relax the planning controls to enable residential intensification in closer proximity to the Airport (for example, by setting the OCB to 55 dB L_{dn}) when the level of annoyance is trending the other way.

d. Planning Controls at other Airports generally experience significant complaints from residents located outside 55 dB L_{dn}:
   - MDA argue that there is no validity in the argument that other airports do not use 50 dB for planning controls so why should Christchurch;
   - The key reasons for this position are:
     - Other airports have failed to implement adequate planning controls;
     - As a result, a large number have operational restrictions;

[27] Miedema and Oudshoorn (2001); "Annoyance from Transportation Noise: Relationships with Exposure Metrics DNL and DENL and Their Confidence Intervals"
[28] See summary in paragraph 91 above
[29] ibid

- MDA reference the Airbiz international case studies (summarised above);
- To augment this, MDA examined Auckland, Wellington and Queenstown airports and found:
    - Auckland Airport has moderate land use controls (no equivalent to the Christchurch 50 dB contour). There are significant areas for new development in these moderate noise areas 55 to 65 dB L_{dn}. A community liaison group (the ANCCG) meet on a bi-monthly basis and provides an opportunity for the community to interact with Auckland International Airport Limited and Airways on noise issues. The majority of noise complaints at Auckland come from the relatively low aircraft noise areas – 45 to 55 dB L_{dn}.
    - Wellington International Airport was built in 1959 in the middle of an existing residential area. Since then, it has been compromised in terms of a curfew on airport operations and there are a significant number of people exposed to aircraft noise. NZS 6805 was implemented for Wellington International Airport in the 1990s but with a considerably 'watered down' version of the Standard's land use planning recommendations. There is no OCB included in the District Plan and thus no land use controls in the moderate noise areas. As a result, there have been further increases in the number of people exposed to aircraft noise over the years. This is an excellent example of how land use planning has caused a significant number of people to be exposed to the adverse effects of airport noise and for consequential restrictions on airport operations.
    - Queenstown Airport - The Queenstown noise boundaries are largely consistent with NZS 6805, in that an ANB based on the 65 dB L_{dn} contour, and an OCB based on the 55 dB L_{dn} contour. Due to the close proximity of houses to the runway, night operations are not permitted between 10pm and 6am. Noise is further restricted at Queenstown for practical reasons as the runway and surrounding topography cannot accommodate larger wide-bodied aircraft.

e. District Plan noise limits for general noise sources are set around 50 dB L_{dn};

- In addition to the above, MDA note that the use of a 50 dB may be seen by some as "unusual" or highly conservative. It is important to note, however, that:
    - the Christchurch District Plan sets the residential zone noise limits as 50 dB L_{Aeq} daytime and 40 dB L_{Aeq} night-time[30]. Waimakariri District sets a similar level;
    - This gives an indication of what local Councils view as a reasonable 'receiving noise level' for the protection for residential amenity in the wider Christchurch context;
    - On this basis, as it is reasonable that residential uses should be protected to a level of 50 dB L_{dn} from general noise sources, it is therefore equally reasonable that residential uses should not be allowed to establish next to an existing noisy activity (such as an airport) at levels higher than 50 dB L_{dn}.
- MDA note that it is common at hearings or in planning processes for questions to arise which seek to draw conclusions based on the number of complaints received;
- There are several reasons for the lack of complaints about aircraft operational noise from Christchurch International Airport. Firstly, the historic land use

[30] MDA state that these controls are effectively the same as 50 dB L_{dn}.

planning has meant that there are relatively few people exposed to aircraft noise in Christchurch. Secondly, people do not complain if they assume their complaints are likely to have no effect. If the airport is operating in its normal mode and they are annoyed, they know nothing can be done about the noise.

- To illustrate the second point, MDA note an example of a 2017 trial in Auckland of alternative arrival procedures caused the number of complaints to jump from 2 per month to around 500 per month. These complaints came from a relatively low aircraft noise area.

f. Providing sound insulation to affected dwellings does not solve all the annoyance issues from aircraft noise:

- Some advocates for residential development in areas affected by aircraft noise have submitted that sound insulation fitted to proposed dwellings is sufficient on its own to avoid the adverse effect of noise and to protect the interests of the Airport. MDA argue that this is incorrect as:
  - Firstly, the level of sound insulation required in the 50 to 60 dB L_{dn} area is provided by a standard house. No additional construction techniques or materials are required;
  - However, 18% to 37% (WHO graph) of the population is still typically highly annoyed by aircraft noise in this environment, even though they have the opportunity to close their windows and achieve 'WHO satisfactory noise levels' inside;
  - Secondly, houses exposed to aircraft noise, are likely to operate with their windows closed to reduce internal noise levels, particularly at night. Three scenarios are then likely:
    - the windows are kept closed resulting in an unsatisfactory level of fresh air; or
    - a ventilation system or air-conditioning system is installed to improve air quality at significant cost; or,
    - the windows are left open resulting in an unsatisfactory noise environment.
  - Each of these scenarios is likely to result in annoyance and possible complaints from the residents;
  - The third difficulty with sound insulation is that it does not deal with the outdoor noise environment.
- This is why sound insulation, on its own, is insufficient and land use controls in the form of density restrictions are the only real form of mitigation available in this case.

Marshall Day Acoustics – Community Response to Aircraft Noise and Literature Review (Appendix Seven)

106. Further to both MDA reports above, MDA have expanded on the relevance to the Kaiapoi Community of the research focussed on community response to aircraft noise. On this issue MDA note:

a. Concerns have been raised as to the relevance of the Taylor Baines Study (TBS), referenced above;

b. Taylor Baines was engaged by the Christchurch City Council and the Regional Council to carry out a community annoyance survey to determine whether noise sensitivity of a New Zealand community was any different to an overseas community;

c. In other words, to what extent were New Zealander's more or less sensitive than people living overseas and exposed to the same level of airport noise;

d. The TBS confirmed that people exposed to noise from the Airport were more annoyed than their overseas counterparts, at that time;
e. It is not relevant that the New Zealanders surveyed were not living in Kaiapoi;
f. The survey was designed to understand the sensitivity of those exposed to specific noise levels, so that predictions could be made about how those living in areas such as Kaiapoi would react to levels that would be reached in the future as an airport grows and noise levels increase'
g. MDA note that in 2002 residents of Kaiapoi would have been subjected to airport noise levels of less than 50dB L_{dn}, so surveying them would have been of little value;
h. Importantly, MDA note, the TBS has been superseded by a large number of recent international studies which show an increase in annoyance levels (as summarised above and detailed in the reports attached as **Appendices Five** and **Six**). Also attached as **Appendix Seven** is the literature review referenced in the MDA assessment.

107. MDA also provide assessment confirming why a lack of complaints cannot be translated into a conclusion that aircraft noise is not a problem at Kaiapoi. This assessment is additional to that contained in the report attached as **Appendix Six** and summarised in paragraph 105 d and e above. MDA note:
a. Residents at Kaiapoi have to date only been receiving noise levels of less than 50dB L_{dn}. That will change as the Airport grows and noise levels increase;
b. Historic land use planning has meant that there are relatively few people exposed to aircraft noise; and
c. The lack of current complaints overlooks the fact that that the noise contours (and thus land use planning) are based on future noise levels – not current noise levels. The number of aircraft movements predicted to occur in future in the operative Air Noise Contours in the current Waimakiriri District Plan, are over double the current movements.

108. Finally, MDA consider the issue of whether road traffic noise is of more significance that aircraft noise. This stems from the findings of the Taylor Baines Study and, on this matter, MDA note:
a. Although the Taylor Baines study found that a larger number of people in Christchurch were annoyed by traffic noise than by aircraft noise, this is very simply because there are far more people exposed to high levels of road traffic noise in Christchurch than there are to aircraft noise; and
b. The international community noise surveys have found that aircraft noise is more annoying than road traffic noise.

The Planning Framework

The Canterbury Regional Policy Statement

109. The Airport is defined, and specifically listed, as "regionally significant infrastructure" and "strategic infrastructure" in the CRPS. The definition of "strategic infrastructure" notes that it includes "facilities, services and installations which are greater than local importance, and can include infrastructure that is nationally significant". Given the earlier assessment of the significant role of the Airport, it is clearly nationally significant.

110. Chapters 5 and 6 of the CRPS establish a policy framework recognising this importance and the need to ensure appropriate integration of new development with infrastructure and the avoidance of reverse sensitivity effects.

111. Chapter 5 deals with land use and infrastructure. **Objective 5.2.1(f)** and **(g)** requires that development is located and designed so that it functions in a way that:

enables people and communities, including future generations, to provide for their social, economic and cultural well-being and health and safety; and which:

f. is compatible with, and will result in the continued safe, efficient and effective use of regionally significant infrastructure;

g. avoids adverse effects on significant natural and physical resources including regionally significant infrastructure, and where avoidance is impracticable, remedies or mitigates those effects on those resources and infrastructure…

112. **Objective 6.2.1** (Recovery Framework) reads, in part:
Recovery, rebuilding and development are enabled within Greater Christchurch through a land use and infrastructure framework that:

10. achieves development that does not adversely affect the efficient operation, use, development, appropriate upgrade, and future planning of strategic infrastructure and freight hubs;

11. optimises use of existing infrastructure…

113. The CRPS includes the 50dB Ldn Air Noise Contour on its maps. **Policy 6.3.5(4)**, which implements **Objective 6.2.1**, requires that new development should only be provided for if it does not affect the efficient operation, use, development, upgrading and safety of existing strategic infrastructure, "*including by avoiding noise sensitive activities within the 50dBA Ldn airport noise contour for Christchurch International Airport, unless the activity is within an existing residentially zoned urban area, residential greenfield area identified for Kaiapoi…*;".

114. **Policy 6.3.5(5)**, similarly, reads:
Managing the effects of land use activities on infrastructure, including avoiding activities that have the potential to limit the efficient and effective, provision, operation, maintenance or upgrade of strategic infrastructure and freight hubs.

115. The 'Principal reasons and explanation' for **Policy 6.3.5** states: "*Strategic infrastructure represents an important regional and sometimes national asset that should not be compromised by urban growth and intensification… The operation of strategic infrastructure can affect the liveability of residential developments in their vicinity, despite the application of practicable mitigation measures to address effects… It is better to instead select development options … where such reverse sensitivity constraints do not exist*."

116. With respect to Kaiapoi the CRPS goes on to note:
"The only exception to the restriction against residential development within the 50dBA Ldn airport noise contour is provided for at Kaiapoi.

Within Kaiapoi land within the 50dBA Ldn airport noise contour has been provided to offset the displacement of residences as a result of the 2010/2011 earthquakes. This exception is unique to Kaiapoi and also allows for a contiguous and consolidated development of Kaiapoi."

117. Given the above, it is valid to consider two issues. First, has the loss of land from the 2010/2011 earthquake sequence already been offset by subsequent residential subdivision and development? In short, the answer is yes. The Airport has investigated this issue and found that there were some 700 land parcels in the Kaiapoi residential red zone, and just over 800 parcels in the post-earthquake Silverstream residential subdivision alone (May 2022).

That said it is noted that there remains a number of undeveloped stages of the subdivision which will lead to the provision of addition residential development opportunities.[31]

118. Second, given the above, and as the Variation and this assessment only relate to existing relevant residentially zoned land, it is valid to consider how a district plan (or in this case the proposed Variation) should give effect to the CRPS. Some guidance on this issue can be found in the decisions of the Independent Hearings Panel (the Panel) appointed to consider the Replacement Christchurch District Plan. Overall, the Panel determined that, although there is no absolute direction in the CRPS to avoid any further noise sensitive activities in existing residentially zoned land within the 50 dB Ldn Air Noise Contour, there is still a need to evaluate whether such activities should be avoided or restricted so as to give proper effect to **Policy 6.3.5** and related CRPS objectives and policies.[32] The Panel recognised the need for an ongoing capacity to assess relevant reverse sensitivity and noise mitigation matters for residential intensification above a certain scale.[33]

119. Ultimately, the Panel determined that, for residential zones in the Christchurch District that sit within the 50dB Ldn Air Noise Contour, residential activities which do not meet permitted zone standards should have restricted discretionary activity status.[34] While this is a specific planning response for Christchurch City, there is no reason why the principle of the Panel's findings should not apply to all residential land including in Waimakiriri and Selwyn. Given this, the direct impact of the Panel's assessment and decision was to reinforce the position that density (amongst other things) was a key matter to control in order to give effect to the CRPS. That position underpins an argument supporting the retention of the existing residential density controls beneath the 50dB contour (as a qualifying matter), rather than the application of the MDRS. It also supports the findings of the earlier reports detailing the operational risks, amenity impacts and economic impacts associated with adverse community response to overflying aircraft – noting the increasing annoyance levels found in the research, and the potential for this to be exacerbated by increased residential density.

120. Equally, it is important to acknowledge that the CRPS framework as it was written, and as it currently exists, was drafted in an entirely different context and not within the current planning framework of the MDRS and planned intensification, nor within the current environment that finds Kaiapoi's housing stock at levels exceeding pre-earthquake numbers.

121. The policy thrust of the CRPS is clear, as it:
    a. recognises the social and economic importance of the Airport, and the need to integrate land use development with infrastructure;
    b. seeks to avoid incompatible activities within the 50dBA contour which may result in reverse sensitivity effects on the Airport;
    c. recognises that the Airport should not be compromised by urban growth and intensification; and
    d. enables the Airport's safe, efficient and effective operation and development.

[31] Note that rule 32.1.1.25 of the operative District Plan establishes a consenting trigger point in this subdivision to a maximum of 1115 lots.
[32] Decision 10 Residential (Part), Independent Hearings Panel, 10 December 2015, at [195].
[33] Ibid, at [235].
[34] Ibid, at [237].

Operative Waimakariri District Plan

122. The operative Waimakariri District Plan contains a suite of policy provisions which aim to strike a balance between facilitating residential development and protecting the operations of the Airport as nationally significant infrastructure. The key policies are:

a. *Policy 11.1.1.8*
Avoid patterns of land use development which may affect the operation, and efficient use and development of Christchurch International Airport

Explanation
Christchurch International Airport is a significant regional resource. Noise sensitive activities within the 50dBA Ldn airport noise contour in the Waimakariri District have the potential to constrain the operation of Christchurch International Airport through limits on operating hours in response to the concerns from residents subject to the noise nuisance from aircraft approaching and leaving the Airport.

b. *Policy 11.2.1.1*
Avoid, remedy or mitigate adverse environmental effects created by the provision, use, maintenance and upgrading of utilities by:

k. avoiding in the receiving environment the noise effect created by aircraft approaching Christchurch International Airport; and

Explanation

The ability to control the effects of the operation of Christchurch International Airport is limited. However the effects can be:

i. avoided to some degree by requiring that noise sensitive activities be discouraged from locating within areas identified as likely to be affected by such noise and in particular within the 50dBA Ldn noise contour, and…

c. *Policy 12.1.1.12*
Avoid the noise effect from aircraft and avoid or mitigate the noise effect from road traffic in the receiving environment.

Explanation
For Christchurch International Airport the 50 dBA Ldn aircraft noise contour shows noise level boundaries encroaching onto land to the south west and north east of Kaiapoi (District Plan Map 138). Within Kaiapoi, as defined in Chapter 6 of the Canterbury Regional Council Regional Policy Statement, consideration is given to balancing the provision of areas for future growth in Kaiapoi and for rehousing people displaced as the result of earthquakes against the 50 dBA Ldn aircraft noise contour constraint on subdivision and dwellinghouse development on areas below four hectares.

For these defined areas of Kaiapoi, under the 50 dBA Ldn aircraft noise contour, consideration is made for the provision of residential development, having regard for the form and function of Kaiapoi and to offset the displacement of households within the Kaiapoi Residential Red Zone which were already within the 50 dBA Ldn contour and

which were displaced as a consequence of the 2010/2011 Canterbury earthquakes. It also provides, as part of greenfields residential development, for Kaiapoi's long term projected growth. Such development provides for the contiguous and consolidated urban development of Kaiapoi. In recognition of the potential adverse effects of aircraft noise over Kaiapoi in the future, information relating to the 50 dBA Ldn aircraft noise contour and the potential for increased aircraft noise will be placed on all Land Information Memoranda for properties within the 50 dBA Ldn aircraft noise contour for Christchurch International Airport

123. The District Plan:
    a. Recognises the Airport as a significant resource and the risks to its operation from reverse sensitivity effects;
    b. In recognition of this, seeks to avoid development that may impact on that resource; and
    c. Provides a Kaiapoi "exception" similar to that found in the CRPS.

124. With respect to the Kaiapoi exception, the explanation contained in the District Plan is aligned with the CRPS. Within that context, the assessment given above (paragraphs 113 – 120) is equally applicable here.

125. The provisions to implement the above policies in the relevant residential zones are:
    a. Zoning – the Residential 1, 2 and 7 Zones;
    b. Density/Subdivision – minimum allotment standards (Table 32.1):
        - Residential 1 – 300m^2
        - Residential 2 – 600m^2
        - Residential 7 – 150m^2, 300m^2 and 500m^2 (Areas A, B and C as shown on ODP 164), with a minimum average allotment size of 200m^2, 365m^2 and 540m^2 (rule 32.1.1.24)
    c. Subdivision matters of control (Rule 32.1.3), including:
        - *Airport and Aircraft Noise:*
          — the effect of the operation of the Christchurch International Airport on subdivision; and
          — the effects of aircraft noise

126. Density control is clearly a key implementation tool for achieving the desired policy outcomes.

Proposed Waimakariri District Plan

127. The land within the AAOCB is proposed to be zoned General Residential (GRZ) and Medium Density Residential (MDRZ). The relevant objectives and policies, as notified, are:
    a. *SD-03 Energy and Infrastructure*
    Across the District:
    2. infrastructure, including strategic infrastructure, critical infrastructure and regionally significant infrastructure:
    a. is able to operate efficiently and effectively; and
    b. is enabled, while:
    i. managing adverse effects on the surrounding environment, having regard to the social, cultural and economic benefit, functional need and operational need of the infrastructure; and

ii. *managing the adverse effects of other activities on infrastructure, including managing reverse sensitivity;*

b. *UFD-P10 Managing reverse sensitivity effects from new development*
Within Residential Zones and new development areas in Rangiora and Kaiapoi:
1. avoid residential activity that has the potential to limit the efficient and effective operation and upgrade of critical infrastructure, strategic infrastructure, and regionally significant infrastructure, including avoiding noise sensitive activities within the Christchurch Airport Noise Contour, unless within an existing Residential Zone;

c. *Noise-01 Reverse Sensitivity Effects*
The operation of regionally significant infrastructure and strategic infrastructure, activities within Commercial and Mixed Use Zones and Industrial Zones and identified existing activities are not adversely affected by reverse sensitivity effects from noise sensitive activities.

d. *Noise-P4 Airport Noise Contour*
Protect Christchurch International Airport from reverse sensitivity effects by:
1. avoiding noise sensitive activities within the 50 dBA Ldn Noise Contour by limiting the density of any residential unit or minor residential unit to a maximum of 1 residential unit or minor residential unit per 4ha, except within existing Kaiapoi Residential Zones, greenfield priority areas identified in Chapter 6 - Map A of the RPS (gazetted 6 December 2013) or any residential Development Area; and
2. requiring noise insulation within the 50 dBA Ldn and 55 dBA Ldn Noise Contour for Christchurch International Airport.

128. The key outcomes sought by the policy framework of the proposed District Plan are:
a. The Airport is able to operate efficiently and effectively, while managing adverse effects having regard to benefits and functional/operational needs; and
b. Avoid residential activities that may give rise to reverse sensitivity effects, unless within a residential zone, including Kaiapoi;

129. The policies attempt to balance the effectiveness and efficiency outcomes sought in strategic objective 03, the operational objective of Noise-O1, against the development imperatives of UFP-P10 and Noise-P4. Policies P10 and P4 appear to replicate the Kaiapoi exclusion found in the CRPS and repeated in the operative District Plan. From the earlier assessments, and considering the findings of the Christchurch IHP (paragraphs 118-119), it is clear that there is some doubt as to the robustness of an argument supporting the Kaiapoi exclusion approach. More importantly, however, the policy framework of the proposed Plan cannot be interpreted in such a way as to allow unlimited residential development beneath the noise contour. As has been stated earlier density is a key determinant in avoiding adverse reverse sensitivity impacts on the Airport, and in achieving appropriate amenity outcomes for those living beneath the Contour.

130. The current rule approach to achieve the policy outcomes is to primarily via subdivision standards for minimum allotment size (SUB-S1). For the GRZ and the MDRZ this is 500m^2 and 200m^2, respectively. The density standards differ from those found in the operative District Plan for the Residential 1, 2 and 7 zones.

131. The proposed Plan also includes relevant matters of control and discretion, as follows:

a. SUB-MCD2 Subdivision design:
   4. Design of the subdivision and any mitigation of reverse sensitivity effects on infrast ructure
b. SUB-MCD9 Airport and aircraft noise:
   1. Any reverse sensitivity effect on the operation of the Christchurch International Air port from subdivision; and
   2. Any effects from aircraft noise on the use of the site for its intended purpose.

Caselaw

132. Given the above, the principle that density controls are important land use planning controls for managing sensitive activities in proximity to airports has been well established before the Courts.

133. Attached, as **Appendix Eight**, is a summary and extracts of relevant decisions in which the Environment Court has articulated the importance of density controls. These cases confirm that density controls are essential for an effective planning framework that manages airport noise effects on the community whilst also safeguarding airport operations.

134. In summary:
   a. The benefits of an airport future-proofing its operation have local, regional and national significance;[35]
   b. There are likely to be a percentage of persons highly annoyed by airport operations even below the 50 dB Ldn noise contour, and there is likely to be an adverse effect on their amenity.[36] A greater number of dwellings between the 50 and 55 dB Ldn contours will lead to an increased number of persons highly annoyed by aircraft traffic;[37]
   c. When weighing up conflicting policies and objectives, the Court has stated that density of dwellings around the Christchurch International Airport is a dominant factor.[38] Airport policies have been considered more significant than those which seek higher densities when the Court was asked to weigh these competing matters; [39] and
   d. The NZS 6805 provides for a two-pronged approach with both noise management controls and land use planning controls. The two need to be considered as a composite package.[40]

The Variation

135. The Council is preparing a Variation to the proposed Plan which will be publicly notified in August 2022. The Variation is the Council's response to its obligations under the Enabling Act and the National Policy Statement on Urban Development 2020 (NPSUD). In summary, the Enabling Act requires Council to apply medium density residential standards (MDRS) to relevant residential zones to enable residential intensification. As noted earlier, the proposed Plan zonings that are within the AAOCB are the GRZ and the MDRZ.

[35] *Robinsons Bay Trust v Christchurch City Council* C 60/2004, 13 May 2004, at [24].
[36] Ibid at [58] and [59].
[37] Ibid at [59].
[38] *BD Gargiulo v Christchurch* CC, C 137/2000, 17 August 2000, at [51] and [63].
[39] *National Investment Trust v Christchurch CC*, C 41/2005, 30 March 2005, at [109].
[40] *Independent News Auckland Ltd & Anor v Manukau City Council,* (2003) 10 ELRNZ 16 at [111].

136. It is assumed that a new MDRZ implementing the MDRS will replace the current GRZ and MDRZ as they currently appear in the proposed Plan. The establishment of the new medium density zone will potentially enable increased permitted density of development within Kaiapoi as anticipated by the NPSUD and the Enabling Act. This includes land beneath the AAOCB, unless it is identified as a qualifying matter which makes less enabling development more appropriate.

137. The proposed MDRS planning tools to be inserted in the proposed District Plan include, amongst other things, increased density standards (3 units per site), increased height (11m, plus roof intrusions up to 1m), more flexible recession plane standards, reduced building setback standards, increased site coverage rules (50%) and reduced subdivision standards. Developments that comply with these more enabling standards, and are not subject to a qualifying matter, can proceed without resource consent. It is further proposed that four or more residential units on a site would require resource consent as a restricted discretionary activity, with discretion limited to stated design principles. Similarly, buildings exceeding 11m in height, and breaches of the recession plane, setback, site coverage and other built form standards would also be assessed as restricted discretionary activities. There are no discretionary or non-complying activities.

138. Overall, these provisions provide a significantly more enabling residential development regime and thus a notable increase in potential development density and built form compared to the operative and proposed District Plan rules.

Conclusions and the Planning Issues that arise

139. The proposal to rezone land and apply medium density standards introduces the potential for significant further residential intensification. While it is accepted that the current form and layout of Kaiapoi, combined with the age of the housing stock, may limit the intensification options, it remains important to consider the implications for the Airport given the risk factors identified in preceding assessments and as summarised below.

140. The remodelled AAOCB, as it relates to urban areas, is illustrated in the map attached as **Appendix One**. The AAOCB is shown in red, with the relevant residential areas highlighted in green. The extent of the existing 50dB contour is shown for context.

141. The preceding assessments and attached reports confirm that:
    a. Christchurch Airport is nationally significant infrastructure and fulfils an important role in domestic, national and international passenger and freight services;
    b. The timing and frequency of international air services are often beyond the control of the Airport; being dictated by other parties (slot taker restrictions);
    c. As the Airport operates 24/7 without curfew or capacity constraint, it is a significant contributor to the national and regional economy;
    d. The MDA report identifies the amenity impacts that arise from noise exposure for sensitive activities within the 50dB Ldn Air Noise Contour, and the increasing annoyance level trend for those living in such locations;
    e. The MDA report confirms that it is appropriate to continue to use the 50dB metric for the outer control boundary, rather than applying a 55 dB contour;
    f. The attached reports identify the risk to Airport operations from reverse sensitivity effects that could lead to constraints on Airport operations;

g. The Property Economics and Airbiz reports identify the risks that constraints on the Airport poses operationally and to the economic wellbeing of Canterbury and the South Island;

h. The current regional and district planning regime provides a clear and coherent policy platform built on the above, and seeks to avoid sensitive activities within the 50dB Ldn contour as this:

- recognises the social and economic importance of the Airport, and the need to integrate land use development with infrastructure;
- seeks to avoid incompatible activities within the 50dBA contour which may result in reverse sensitivity effects on the Airport;
- recognises that it should not be compromised by urban growth and intensification;
- enables the Airport's safe, efficient and effective operation and development;
- provides a specific exclusion for Kaiapoi; and
- recognises the importance of using density control as a key planning tool to achieve above.

i. Caselaw supports the current planning approach, including the use of density controls, and there have been no material change in evidence since most cases where decided; and

j. While there is a specific policy exclusion for Kaiapoi, the preceding assessments conclude that the reasons underpinning the exclusion no longer exist, there remains a wider imperative to protect the Airport from reverse sensitivity effects and enable its efficient and effective operation. In addition, the Christchurch IHP decisions provide a useful context in which to apply the CRPS policy (which informs the policy direction of the operative and proposed District Plans). Overall, the IHP concluded that it was relevant to maintain a capacity to consider the effects of residential intensification.

142. The application of the MDRS has the potential to enable increased density of development on land under the AAOCB, beyond that currently provided for in the District Plan. In many ways, the proposed MDRS are the antithesis of the provisions that unpin the current planning regime designed to achieve appropriate amenity outcomes for residents beneath the contours and to ensure effective and efficient operation of the Airport.

143. Given all the above it is appropriate to conclude that the MDRS should be less enabling within the AAOCB by providing for airport noise as a qualifying matter. The mechanism to achieve this is to apply the existing operative District Plan subdivision density standards to the area covered by the qualifying matter within the proposed Plan. This is, in effect, a retention of the operative planning framework and no other amendments to the proposed Plan are required at this point in time. Moreover, no further amendments are required to the policy framework of the proposed Plan.

PART B SECTION 77K ASSESSMENT

Introduction

144. Section 77K(1) of the RMA establishes a process for considering existing qualifying matters. An existing qualifying matter is described in section 77K(3) as a qualifying matter referred to in section 77I(a) to (i) that is operative in the relevant district plan. Relevant to this issue, this includes[41]:

(e) a matter required for the purpose of ensuring the safe or efficient operation of nationally significant infrastructure

145. The term nationally significant infrastructure is not defined in the RMA, but is defined in the NPS UD[42], as follows:

any airport (but not its ancillary commercial activities) used for regular air transport services by aeroplanes capable of carrying more than 30 passengers

146. Section 77I allows the territorial authority to make the MDRS and the relevant building height or density standards less enabling within a relevant residential zone where a qualifying matter is present.

147. The alternate process for existing qualifying matters prescribed under section 77K(1) requires the territorial authority to:

(a) identify by location (for example, by mapping) where an existing qualifying matter applies:

(b) specify the alternative density standards proposed for those areas identified under paragraph (a):

(c) identify in the report prepared under section 32 why the territorial authority considers that 1 or more existing qualifying matters apply to those areas identified under paragraph (a):

(d) describe in general terms for a typical site in those areas identified under paragraph (a) the level of development that would be prevented by accommodating the qualifying matter, in comparison with the level of development that would have been permitted by the MDRS and policy 3

148. The following sections address these matters.

Section 77K(1)(a) - Identify by location where an existing qualifying matter applies

149. A map attached as **Appendix One** shows the spatial extent of the AAOCB. Within a residential zoning context, the contours extend over land proposed to be zoned medium density residential. The proposed medium density residential zone will replace land currently proposed to be zoned GRZ and MDRZ in the proposed District Plan. That land is currently zoned Residential 1, 2 and 7 in the operative District Plan.

Section 77K(1)(b) – Specify the alternate density standards proposed for those areas

150. Residential density has been identified as a key factor in avoiding adverse reverse sensitivity effects on the Airport and thus the resulting operational risks and adverse economic outcomes. Equally, it assists in addressing adverse amenity effects for communities living

[41] And in section 3.32(1)(c) NPSUD

[42] NPS UD – Section 1.4 Interpretation

beneath the noise contours. Within this context, and as this is entirely aligned with the existing Regional and District policy frameworks, it is proposed that the existing subdivision density standards of the operative District Plan should apply beneath AAOCB being the minimum allotment sizes for the residential 1 and 2 zones (300m^2 and 600m^2). This land is zoned GRZ and MDRZ in the proposed District Plan, although it is assumed that it will all be rezoned the new MDRZ under the proposed Variation. In order to deliver the desired density outcome for the qualifying matter, the area beneath the AAOCB should be broken into two areas (Areas 'A' and 'B" which reflect the zoning pattern as it currently exists in the proposed District Plan), with the relevant density standard applying in each area. This is, in effect, a retention of the operative planning framework and no other amendments to the proposed District Plan are required at this point. Moreover, no further amendments are required to rule or policy framework of the Plan.

151. The AAOCB partially covers land that is zoned Residential 7 (the Silverstream development) in the operative District Plan. The ODP and subdivision rules provide for a range of subdivision densities; being 150m^2 to 500m^2. A feature of this land is that it is fully developed with very modern housing stock. As a consequence of this, it is proposed to apply the 300m^2 density standard to this land, rather than applying the various ODP standards – noting that in locations there has already been a departure from the ODP.

152. The Plan attached as **Appendix Ten** illustrates the extent of the qualifying matter and the boundaries of areas A and B. Table One below provides recommended changes to table SUB-S1 of the proposed District Plan to achieve the above.

Table One: Plan Amendments

Zone	**Minimum allotment area**
~~General Residential Zone~~	~~500m2~~
Medium Density Residential Zone	200m^2 Except where located with the Airport Qualifying Matter identified on Planning Map XX: Area A – 600m^2 Area B – 300m^2

153. The proposed density standards will enable a level of development on sites which have historically been zoned for residential land use, but which fall within the 50 dB Ldn contour. It would not be appropriate to increase the existing residential density in these locations for the reasons outlined in the Part A assessment.

Section 77K(1)(c) – Identify in a section 32 report why the qualifying matter applies

154. **Appendix Nine** contains a section 32 assessment ('the s32 report'). It must be noted that the report was prepared for a section 77K(1)(c) assessment for the Christchurch District Plan. That

said, the matters assessed in that report are directly relevant to this matter and thus the findings remain valid.[43] In particular, that the proposal to provide for the airport noise qualifying matter by amending MDRS provisions on land within the AAOCB is the most appropriate objective for achieving the purpose of the RMA as it:

a. is necessary to accommodate a valid qualifying matter in respect of s77I(e);
b. does not unreasonably frustrate the Council's implementation of its obligations under the NPSUD, RPS and in turn, the purpose of the Act and the intent of recent amendments to the Act to improve housing supply and enable residential intensification; and
c. aligns with the Plan policy framework relating to health, amenity and Airport operational outcomes.

155. Consequential to the above, the Variation should include alterations to the MDRS to accommodate the airport noise qualifying matter. Specifically, this should include the following:

a. Amendments to table SUB-S1 to amend the minimum allotment standards, as described in the Section 77K(1)(b) assessment above; and
b. Delineate the AAOCB on the relevant Planning Maps to show the extent of the qualifying matters in the District; as illustrated in the plan attached as **Appendix Ten**.

<u>50 v 55 Contours</u>

156. Following the preparation of the s32 report, further consideration has also been given to whether, in principle, the 50 dB metric should continue to be used, or whether a change to a 55 dB contour is appropriate. Such an assessment does not fit neatly within a s32 assessment, as no change is proposed to the concept of retaining a 50 dB contour within the District Plan. Moreover, no changes are proposed to the policy framework that relate to the contour.

157. That said, given that it is proposed to include the AAOCB as the qualifying matter, , it is appropriate to assess from a planning perspective whether the 50 dB contour (the AAOCB) will achieve the preferred objective evaluated and adopted in section 6 of the attached s32 report (**Appendix Nine**); being:
To achieve a balance in enabling housing supply and residential intensification, while protecting strategic infrastructure including the Airport from reverse sensitivity effects, and maintaining the health, safety and amenity of residents, through the imposition of the remodelled AAOCB as a qualifying matter over areas subject to MDRS provisions.

158. The purpose of an air noise contour is to

a. ensure people are protected from establishing sensitive land uses in areas that are exposed to levels of aircraft noise which might disturb them or affect their quality of life resulting in adverse amenity and health outcomes; and
b. protect the Airport from reverse sensitivity effects, enabling airport operations to continue to support and benefit communities.

159. Given this effects focus, the preceding assessments of MDA and Airbiz are particularly relevant in determining which metric best achieves the above outcomes.

[43] The report does consider an additional issue specific to the Christchurch planning context relating to the manner in which the qualifying matter is to be included in the District Plan. That issue is not relevant to this assessment.

160. MDA promote the use of a 50dB Contour (and related provisions) as the most effective and efficient planning tool and note:
   a. Airport operations create unavoidable noise;
   b. Community response to aircraft noise is a "grey scale" and that annoyance does not start or stop at a specified noise level (or contour boundary);
   c. Research confirms:
      - high annoyance rates for communities between 50 and 55dB Ldn, and that the latest research confirms the rates are increasing; and
      - the latest overseas studies confirm that community tolerance to aircraft noise is likely reducing, not increasing;
   d. If land is available elsewhere for new residential (or other sensitive activities) development or intensification, this should be preferred to land within the 50 Ldn contour; and
   e. Specifying sound insulation for activities between the 50 and 55 contour will not eliminate all the adverse effects of noise, due to open windows and an unsatisfactory noise environment.

161. From a review of the Airbiz international case studies, and their own review of Auckland, Wellington and Queenstown Airports, MDA argue that there is no validity in the argument that other airports do not use 50 dB for planning controls so why should Christchurch. The key reasons for this position are:
   a. Other airports have failed to implement adequate planning controls; and
   b. As a result, a large number have operational restrictions.

162. Overall, it would not be sensible to relax the planning controls to enable residential intensification in closer proximity to the Airport (for example, by setting the OCB to 55 dB L_{dn}) when the level of annoyance is trending the other way.

163. The Airbiz report also highlights case studies which show:
   a. significant proportions of populations consider themselves highly or moderately annoyed at exposure levels below 55 Ldn;
   b. Whatever the metric selected and the position of a noise contour for planning purposes, there are linkages between urban encroachment and pressures to mitigate actual or perceived, current or future aircraft noise impacts through operational restrictions; and
   c. No cases were found where regulatory authorities relaxed protection in terms of an OCB equivalent level(e.g. reducing an OCB from 50 to 55Ldn).

164. In summary, Airbiz conclude that:
A relaxation of the CIA OCB from 50dBA Ldn to 55dBA Ldn would provide a framework to enable new noise sensitive activity such as residential, schools, hospitals etc to be developed closer to Christchurch Airport. The risk of negative amenity impacts on those new occupants, and reverse sensitivities then impacting airport operations and efficiency is real. This risk is demonstrated by global examples documented in previous sections of this report.

165. Adopting a 55dB contour, with no planning controls in the 50 to 55 space, would lead to poor environmental outcomes for sensitive activities in those locations. On balance, and from a noise amenity perspective alone, it is essential to retain a 50 dB contour.

166. It is notable also, that the application of a 50 dB contour is entirely aligned with the existing policy framework of the CRPS and the Waimakariri District Plans as assessed earlier in this report.

167. The Airbiz report (**Appendix Two**) outlines the risks to Airport operations from poor planning controls and inadequate safeguarding. The Property Economics report highlights the economic value of the Airport's operations, the contribution it makes to the South Island GDP and the potential loss of economic activity and downstream employment opportunities should operational constraints apply as a result of community annoyance levels. The evidence demonstrates that the risk of such outcomes is reduced through the retention of a 50 dB contour as the outer control boundary.

168. In summary, and from a s32 perspective, the retention of a 50 dB contour:
   a. Has direct environmental, economic and social benefits. There are no cultural benefits;
   b. Has minimal economic and social costs, given the largely permissive rule framework attached to the contour and the findings of the housing capacity study. It should be noted, however, that there are potentially significant environmental, social and economic costs should the 50 dB contour be removed. There are no cultural costs;
   c. Is effective as it will ensure that the protection of the Airport from reverse sensitivity effects, and the maintenance of the health, safety and amenity of residents will continue to be achieved; and
   d. Is efficient given that the benefits will far outweigh the costs. In addition, the relevant District Plan provisions will remain intact.

169. Section 32(2) requires an assessment of the risk of acting or not acting if "there is uncertain or insufficient information about the subject matter of the provisions". Given the lengthy history of the planning provisions relating to Airport contours, the substance of the remodelling exercise and supporting reports and assessments, and the assessments and investigations supporting this analysis, it is considered that there is certain and sufficient information on which to act.

170. Overall, it is considered that the proposal to retain 50dB as the outer control boundary is the most appropriate method for achieving the objectives and policies of the District Plans and the objective stated in paragraph 157 above. Moreover, the benefits will outweigh the costs. Given this, the proposal will achieve the purpose of the RMA.

Section 77K(1)(d) - Describe in general terms the level of development that be prevented by accommodating the qualifying matter

171. For the relevant residential zones, the operative District Plan provides (generally speaking) for a single residential unit and an additional minor residential unit (75m^2 in area) on a site that complies with the subdivision area and dimension rules set out in table 32.1 (rule 31.1.4). Permissible site coverage varies with each zone, ranging between 35% (Res 2), 50% (Res 1) and 40-60% for the Residential 7 zone. The minimum allotment standards are discussed above. The proposed District Plan is similar, with a dwelling and minor residential unit (80m^2) being permitted. For the GRZ the maximum permitted site coverage is 45%, and for the MDRZ it is 55%.

172. Therefore, the level of development theoretically prevented by accommodating Air Noise Contours as a qualifying matter can be understood as, approximately:
   a. 1 fewer residential unit per site (accounting for the present ability to establish both a residential unit and minor residential unit per site);
   b. More size restrictions applicable to minor residential units; and
   c. Reduced site coverage, depending on zoning.

173. For completeness, it is not realistic to assume for the purpose of this assessment that every residentially zoned site within the Air Noise Contours would take up the opportunity to develop to the extent enabled through the MDRS. Many sites in residential zones have been recently re-developed and contain newly built dwellings that are unlikely to be further modified or re-built in line with MDRS. Some sites may contain additional practical constraints which limit the ability to take up MDRS.

174. While it is true that the AAOCB extends over a significant portion of Kaiapoi, it is appropriate to maintain less enabling density standards for this area to protect airport operations and avoid unreasonable amenity outcomes. It is important to note also that new residential development areas siting outside of the AAOCB, currently zoned rural, are potentially enabled through a process included in the proposed Plan. There are also existing residentially areas outside of the AAOCB with remaining development potential (Silverstream – as noted above, and Beach Road to the east). As existing residential areas they are candidates for the application of the MDRS, unless the Council identifies additional qualifying matters that should apply.

175. Overall, while it is arguable that any reduction in development opportunities resulting from the application of the AAOCB as a qualifying matter is potentially undesirable, it is essential to consider two matters:

a. the legislation deliberately and purposefully provides for qualifying matters and thus recognises there will be circumstances where the development potential of the MDRS cannot and ought not be realised; and
b. it is clear, for all the reasons outlined in the Part A assessment above, and in the section 32 assessment (**Appendix Nine**), that such circumstances exist here.

PART C: RECOMMENDATIONS

176. Given the above, it is recommended that the Variation should include alterations to the MDRS to accommodate the airport noise qualifying matter. Specifically, this should include the following:

a. Amendments to table SUB-S1 to amend the minimum allotment standards, as shown in the Table One below; and
b. Delineate the AAOCB on the relevant Planning Maps to show the extent of the qualifying matters in the District; as illustrated in the plan attached as **Appendix Ten**.

Zone	**Minimum allotment area**
~~General Residential Zone~~	~~500m2~~
Medium Density Residential Zone	200m^2 Except where located with the Airport Qualifying Matter identified on Planning Map XX: Area A – 600m^2 Area B – 300m^2

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Appendices – attached separately

Appendix One: AAOCB Contour

Appendix Two: Airbiz Report – Airport Operations and Safeguarding

Appendix Three: Paling Consulting Report – Freight Tends

Appendix Four: Property Economics Report – Economic Significance and Vulnerability

Appendix Five: Marshall Day Acoustics Report – Noise Effects

Appendix Six: Marshall Day Acoustics Report – Land Use Planning

Appendix Seven: Marshall Day Acoustics – Community Response to Aircraft Noise and Literature Review

Appendix Eight: Caselaw Extracts

Appendix Nine: Section 32 Report

Appendix Ten: Qualifying Matter Map