Before an Independent Hearings Panel
at Rolleston

under: the Resource Management Act 1991

in the matter of: Submissions and further submissions in relation to the proposed Selwyn District Plan

and: Strategic Directions Proposal

and: **Christchurch International Airport Limited**
Submitter DPR-0371

Statement of Evidence of Sebastian Hawken

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REFERENCE: Jo Appleyard (jo.appleyard@chapmantripp.com)
Amy Hill (amy.hill@chapmantripp.com)

chapmantripp.com
T +64 3 353 4130
F +64 3 365 4587

PO Box 2510
Christchurch 8140
New Zealand

Auckland
Wellington
Christchurch

chapman tripp

STATEMENT OF EVIDENCE OF SEBASTIAN HAWKEN

INTRODUCTION

Qualifications and experience

1 My name is Sebastian Tate Hawken. I am an aviation and airport planning advisor with 15 years' experience specialising in airport master planning and strategy. I am New Zealand/Pacific Manager for the international specialist aviation and airport planning consultancy Airbiz Aviation Strategies Ltd (Airbiz). I am based in Auckland, and have carried out projects in New Zealand, the Pacific, Australia, North America and Europe. I previously worked for Arup in an airport planning role whilst living in the United Kingdom.

2 I have a Bachelor of Business Degree from Massey University.

3 I have undertaken over 200+ projects and studies for airports ranging in size from rural airfields, regional and domestic airports and large international airports such as Auckland, Christchurch and Wellington, Melbourne, Sydney and Brisbane, Sabiha Gokcen Airport (Turkey), Barcelona (Spain), Calgary (Canada), Oliver R. Tambo (South Africa), Gatwick and Manchester (England). My responsibilities have ranged from Project Director to specialist technical consultant across a range of technical areas.

4 In New Zealand, since my return from the United Kingdom in 2012, I have undertaken studies at the following airports – Auckland, Christchurch, Wellington, Queenstown, Dunedin, Invercargill, Kapiti, Hamilton, Tauranga, Blenheim, Rangiora, Mercer, Thames. Overseas I have undertaken projects at Melbourne, Brisbane, Sydney, Gold Coast, Port Hedland (Western Australia), Tonga, Kiribati, Federated States of Micronesia, Fiji, Samoa, Vanuatu, the Solomon Islands, the Cook Islands and Tuvalu.

5 Relevant project experience in airport planning studies include:

5.1 Auckland Airport Master Plan

5.2 Auckland Airport Runway End Protection Area (REPA) Review

5.3 Auckland Airport Strategic Terminal Development Plan

5.4 Wellington Airport Master Plan

5.5 Wellington Airport Southern Apron Development Plan

5.6 Wellington Airport Terminal Expansion Programme

5.7 Invercargill Airport Master Plan

5.8 Dunedin Airport Master Plan

5.9 Christchurch Airport Master Plan

5.10 Blenheim Strategic Development Plan

5.11 Samoa Airport Master Plans for Faleolo and Asau

5.12 Vanuatu Airport Master Plans for Port Vila, Santo-Pekoa and Whitegrass

5.13 Solomon Island Airport Master Plans for Honiara and Munda.

5.14 Rarotonga Airport Master Plan

6 I have made presentations to conferences at the New Zealand Airports Association and Airport Council International (ACI) Pacific.

7 Although this is a planning hearing, I have read the Environment Court Code of Conduct for expert witnesses and agree to comply with it. I confirm I have complied with the Code of Practice in preparing this evidence.

8 In preparing this report I was assisted by the following person: David Cohney, a senior associate of Airbiz with whom I continue to collaborate on many studies particularly about strategic planning for airports and aviation.

9 Unless otherwise stated the opinions are expressed are my own as of 2021.

Scope of evidence

10 I have been asked to provide comment in relation to the relief that CIAL has sought in the proposed Selwyn District Plan and to explain Christchurch International Airport's significance for the district. In summary:

10.1 Airports are important to the cities and regions they serve as part of the transport network for passengers and cargo.

10.2 Airports also serve as a base for other aviation services such as aircraft maintenance, government and military aviation activity, non-scheduled services, rotary wing operations, emergency services, recreation and tourism.

10.3 Air services are essential to any nation, but particularly for a remote island nation such as New Zealand and for connectivity within the country between the South and North Islands and within regions.

10.4 Airports serve as a base for emergency services to support disaster management and recovery, whether due to extreme weather events, floods, avalanche, landslides, earthquakes or even delivery of medical equipment and vaccinations during pandemics.

10.5 The connectivity that an airport provides is essential to support regional economic activity and associated jobs in many industries as well as on the airport campus and adjacent commercial precincts.

10.6 Careful and deliberate planning is required to provide for safe operation of aircraft, requiring compliance with international and national regulations, rules and practices covering a wide range of aspects.

10.7 The safeguarding of essential aviation infrastructure does not stop at an airport's boundary. The safety of aircraft navigation and operations in the final stages of descent to the airport runway and on the initial stages of climb on departure from the runway also requires careful planning and protection from incompatible land use and structures which can create hazards.

10.8 Airports provide essential transportation connectivity in the event of disruption of road, rail, and ferry networks in New Zealand.

SUMMARY AND CONCLUSIONS

11 Airports are essential transportation nodes. Airport resilience is essential for disaster management response and security of the transport network.

12 Suitable sites for major international, domestic and regional airports are difficult to find and the operation at existing sites needs protection for the economic and social benefit of the communities that airports serve.

13 There are specific aspects of airport safeguarding which are reflected in policy and regulation around the world to ensure safety of operations and this includes:

- *"improving community amenity by minimising aircraft noise-sensitive developments near airports; and*
- *improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues."* [i]

14 While airports cannot generally directly control development in the vicinity of the airport, they work closely with various levels of governments and authorities to ensure compatible land use.

15 Notwithstanding the recent unprecedented downturn in aviation activity, recovery for domestic and regional activities is already well advanced and it can be said with confidence that in the long term it is almost certain that aviation will return to being a long-term growth industry as the commerce and consumers drive increasing demand for aviation services.

16 Another challenge facing the aviation industry as part of worldwide recognition of the impacts of climate change is the transition to a low or zero carbon future. The future of aviation locally and globally is discussed further below.

17 Christchurch Airport is of significant importance to New Zealand, the South Island, the Canterbury region and the Selwyn District as an essential transportation hub and base for all types of aviation activity now and in the foreseeable future. Should the safety or efficiency of operations be compromised it is unlikely that a suitable replacement site could be found in proximity to the city of Christchurch. Even if a site were found, development would take many years and come at an extremely high financial and economic cost.

18 Christchurch Airport is of national as well as local significance.

19 Christchurch Airport is also considered of international importance in its proximity to Antarctica and its role facilitating scientific exploration of the continent.

20 The Airport is a nominated "alternative" to Auckland International Airport, if aircraft bound for Auckland are not able to land there. This may be due to poor weather, an accident blocking the runway or other operational reasons.

AIRPORT CONNECTIVITY

21 Airports are vital components of a modern transport infrastructure network. The airport system includes the runways and taxiways, aircraft parking stands and aprons, terminals, roads and carparks and on-site aviation related industry.

22 Just as important is the associated airspace in the immediate vicinity of the airport which facilitates the safe navigation of aircraft along flight paths for approaches to the runway on arrival and take-offs from the runway on departure, connecting into the wider local, regional, domestic trunk and international airspace network.

23 Airports are key enablers of air connectivity for passengers and freight, and also inter-modal connectivity of transfers for passengers, freight and mail, usually between road and air, and sometimes including rail and/or marine transport modes.

24 It is increasingly important that regional communities at business and governmental levels recognise that their airport is a strategic asset and engage with airport operators to successfully safeguard airport operations and activities for the short-, medium- and long-term to enhance connectivity and drive regional competitiveness and success.

Passenger Hub

25 Christchurch Airport is a key enabler of business connectivity, through its central location and proximity to the Christchurch Central Business District. It enables quick international and often same day domestic business connections to main domestic and regional ports. It also connects Trans-Tasman business travellers.

26 Christchurch Airport is also a key enabler of social connectivity, providing critical air links for families, friends and relatives who may be geographically separated.

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

28 Prior to the Covid-19 pandemic there were services to ten international destinations including Sydney, Melbourne, Brisbane, Perth, Gold Coast, Singapore, Guangzhou, Hong Kong, Rarotonga and Nadi, with nine international airlines represented. Scheduled traffic in the financial year 2019 comprised 92,345 domestic and 11,593 international aircraft movements carrying 6.3 million annual passengers and making it the second busiest airport in New Zealand. The airport is operationally available 24 hours a day, seven days a week. In 2019 Christchurch Airport had 105,000 Domestic to International transferring passengers and 245,000 domestic-to-domestic transferring passengers, illustrating its key role in regional connectivity for the lower South Island.

29 Infrastructure at the airport, such as the runways, taxiways and aprons, connect Christchurch, the wider region and the South Island to the rest of New Zealand and the world, 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.

Freight Hub

30 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.

31 Statistics New Zealand notes that Christchurch Airport is the second largest airport for airfreight imports and exports in New Zealand (after Auckland), accounting for $3.14 billion New Zealand dollars' worth of airfreight in 2017/18. It also notes that: *"Air freight carries less than 1% of our trade by volume, but about 16% of our exports and 22% of our imports by dollar value.[ii]".* Christchurch International Airport plays a key role in this trade.

Antarctic Connectivity

32 Christchurch Airport is New Zealand's gateway to Antarctica, with a well-established International Antarctic Centre[iii]. This includes a dedicated Antarctic aircraft apron from which to airlift cargo and its own airport departure terminal for personnel travelling to and from Antarctica during the summer season. It serves as a base for the United States, New Zealand and Italian[iv] Antarctic Programs and provides key emergency access to the continent as recently illustrated by an emergency medical evacuation. Stuff.co.nz quotes:

> *"A military aeroplane was called in to carry out a medical evacuation of a member of the United States Antarctic Program who had been injured in Antarctica.*
> *A Royal New Zealand Air Force C-130 Hercules left Christchurch at 10.25pm on Sunday for the seven-hour, 3920km flight to the US-run McMurdo Station on Ross Island.[v]"*

Covid-19 Pandemic

33 During the current Covid-19 pandemic the Airport has played a key role maintaining international and domestic passenger connectivity, whilst meeting health requirements through specific operational protocols enabled within the airport's terminal infrastructure. It also provides an important stock of Managed Isolation and Quarantine (MIQ) rooms to house returning New Zealanders undertaking a mandatory two-week quarantine.

34 During the pandemic the importance of air freight has been further emphasised. The Airport enables direct and large capacity freighter movements and belly hold freight and forms parts of a connected and diversified freight transport network to and from New Zealand. This helps ensure the availability of key goods in New Zealand that require movement by air and helps mitigate the worst impacts of constraints to freight movements via shipping brought on by the pandemic.

Summary

35 Airports in general play a key role in resilience during natural disasters and Christchurch Airport has had played key roles in the recent disasters of the 2011 earthquake, 2016 Kaikoura earthquake and 2021 Canterbury floods connecting Civil Defence operations and facilitating evacuations and other emergency response requirements. This is expanded on later in my evidence.

36 Aviation world-wide has a long and sustained history of growth of the order of 4% per annum, often rebounding quickly from shocks. There remains long term potential for sustained increases in air travel for business and leisure with growth in GDP and general increases in the standard of living. The nature and role of the airport at Christchurch serving the main city of the South Island, as an international gateway, domestic and regional hub infers growth in airport activity over the long term.

37 It is critically important to safeguard Christchurch Airport for the short-, medium- and long-term through effective land use planning controls, to ensure its essential role connecting Christchurch, Canterbury, the South Island and New Zealand can be maintained and enhanced.

AIRPORT RESILIENCE

38 Airports are critical links in disaster response and recovery, providing critical staging areas for disaster management, enabling fast medical evacuations and transport and providing important resilience to the overall transport network when roads, rail and maritime transport are compromised.

39 Christchurch Airport is a designated 'Lifeline Utility' in the New Zealand Civil Defence Emergency Management Act 2016. Section 60 of that Act notes that Lifeline Utilities must:

> *"… ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency and participate in the development of the national civil defence emergency management strategy and civil defence emergency management plans."*

40 Hence Christchurch Airport plays a key role in local, regional and national disaster management. This places a range of requirements on the Airport and confirms the Airport's importance as a key asset for Canterbury and the wider South Island following any large-scale incident.

41 Examples of the important role that Christchurch Airport has played in recent disasters include:

41.1 2011 Christchurch Earthquakes – Christchurch Airport was the main arrival and departure point for a wide range of local and international rescue teams. Emergency supplies were airlifted into Christchurch and many of the critically injured were evacuated out. Christchurch Airport was credited with contributing to helping save dozens of lives due to the ability to reopen the facility so quickly and keep it open 24/7. In the seven days following the initial earthquake, more than 45,000

passengers were moved out of Christchurch utilising a 'shuttle service' to Auckland.

41.2 2016 Kaikoura Earthquake – Due to Kaikoura being essentially cut off from all other towns by road and rail, air transport into and out of Kaikoura was vital. Christchurch Airport was the initial staging point for military and private air response. Large aircraft with supplies would arrive into Christchurch and be helicoptered out to Kaikoura. Those evacuated from Kaikoura would often be airlifted back to Christchurch.

41.3 2017 Port Hills Fires – Christchurch Airport quickly became the staging point for all fixed wing and many helicopter aerial assault aircraft fighting the Port Hills fires. Christchurch Airport hosted on site the various aircraft and crews, making sure they had water available to refill aircraft as well as resting facilities for crews. In addition to this, over a period of 10 days, Christchurch Airport provided over 20 skilled staff to assist in the Emergency Operations Centre in Rolleston supporting the response effort.

41.4 2020 COVID-19 Repatriation Evacuations – In April and May 2020, thousands of stranded tourists visiting the South Island were evacuated to their home countries through Christchurch Airport. Visitors from Germany, the Netherlands, the UK, France and a range of other European countries all boarded repatriation flights at Christchurch Airport in a desperate attempt to get home as international borders shut. At the same time, hundreds of Kiwis were repatriated back to NZ on charter flights due to the disruption to commercial flights and border restriction.

41.5 2019 Rangitata Floods – This affected many international tourists and there were many general aviation fixed wing and helicopter operators ferrying passengers between Timaru and Christchurch to enable them to continue their journey or catch international flights which would otherwise have not occurred due to road and rail outages.

New Zealand and the Pacific

42 Outside of Christchurch there are numerous examples of airports providing vital resilience in disaster management and recovery roles during natural disaster across New Zealand and the Pacific, such as:

42.1 In the Whakaari / White Island Disaster in December 2019 Whakatane Airport provided a key staging ground for rescue operations to and from Whakaari / White Island.

42.2 Kaikoura Airport provided a key staging ground and evacuation point for disaster recovery during the 2016 Kaikoura Earthquake. This extended for 2 months following the quake until road access could be restored.

42.3 There are numerous examples around the Pacific of airports being used for disaster recovery following natural disasters, such as Port Vila Airport in the aftermath of Cyclone Pam in 2015.

AIRPORT SAFEGUARDING

Safeguarding

43 Airport safeguarding has been adopted internationally as a term encompassing the measures that support the operational safety of aircraft and the passengers and crews aboard them, while taking-off or landing, or flying in the vicinity of an airport. In particular it refers to land use planning controls implemented in the vicinity of an airport by national or local territorial authorities.

44 The airspace in the immediate vicinity of the airport is particularly critical from a safety perspective as this is where statistically most accidents and fatalities occur. Boeing (Statistical Summary of Commercial Jet Airplane Accidents Worldwide Operations | 1959 – 2019) notes[vi] that:

> *"Cruising at altitude is the safest phase of a flight. Around 7 percent of aviation fatalities occur before an airplane leaves the ground, while 12 percent occur during take-off and initial climb. Over half of all fatalities occur on final approach and landing. Although the actual numbers remain low, most technology improvements over the past few decades have focused on taxiing, climbing, approach, and landing as critical safety factors."* (based on 2010-2019 data)

45 Parts of the Selwyn District are under the arrivals flight paths from the south-west of the airport as they approach to land on the main runway (Runway 02). Other areas are under the departure flight paths as aircraft take-off to the south-east on the main runway (Runway 20) and then turn north heading to domestic destinations on the North Island or other international routes.

46 It is recognised locally and internationally that airport operators have the primary interest and expertise in identifying and mitigating potential hazards to aircraft operations in the vicinity of an airport, but it is other parties (government agencies and local government) that actually develop and implement planning policy, regulations and procedures.

47 Urban development encroachment into areas necessary 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. Inadequate protection can and will often lead to the creation of a potentially unsafe operating environment, reverse sensitivity issues and future constraints on air services operations, development and capacity. Carefully considered appropriate land use planning is the most effective means to protect the airport and the community against adverse impacts.

48 Airports and their representative national and international bodies have and continue to develop a range of useful materials to inform and advise town planning professionals and the authorities on the topic of airport safeguarding.

49 The New Zealand National Airspace Policy 2012 notes[vii]:

> *"To avoid or mitigate incompatible land uses or activities and potential obstacles or hazards that will impact, or have the potential to impact on the safe and efficient operation of aircraft, regional and district plans should have regard to applicable Civil Aviation Rules. Airport authorities and local authorities should work together in a strategic, cooperative and integrated way to ensure that planning documents (including those under the Resource Management Act) appropriately reflect the required noise contours and/or controls and approach and departure paths that take account of current and projected traffic flows.*
>
> *Resource Management Act planning tools (including plan rules and designations) should as far as practicable seek to avoid the establishment of land uses or activities and potential obstacles or hazards that are incompatible with aerodrome operations or create adverse effects."*

50 The New Zealand Airports Association (NZ Airports) is the industry association for New Zealand's airports. It represents the national network of 42 airports. In its' 14 February 2020 submission on the Urban Development Bill[viii] NZ Airports notes:

> *"Most airports in New Zealand rely heavily on district planning controls around airports to avoid or manage adverse effects on their operations due to incompatible (e.g. sensitive) activities locating in proximity to airports…… It is critical that the effects areas surrounding many of New Zealand's airports are well understood and maintained and their effectiveness is not undermined through inappropriate development. The location of urban development within airports' effects areas without due consideration to the potential effects of such development on airports, and vice versa,*

has the potential to undermine the protections these areas provide for ongoing airport operations."

51 NZ Airports has adopted the Airport Master Planning Good Practice Guide February 2017[ix] which sets out good practice guidelines for development of airport master plans. This was developed in conjunction with the Australian Airports Association (AAA) and uses the Australian National Airports Safeguarding Framework (discussed in paragraphs below) to inform it. Section 3.2 - Off Airport Planning Objectives, notes that:

"Off-airport planning is often an area overlooked or inadequately addressed by airport Master Plans. Nevertheless this is a critical issue for the long term safeguarding of any airport and it should be addressed.

In relation to off-airport planning a Master Plan generally aims to minimise the potential encroachment of incompatible activities and development in the vicinity of the airport, particularly in terms of:

- *Aircraft noise impacts*
- *Intrusions into the protected operational airspace of the airport*
- *Distractions to pilots from lighting in the vicinity of the airport*
- *Attraction of wildlife leading to the risk of strikes*
- *Building-generated wind-shear and turbulence from nearby development*
- *Public safety — particularly off the ends of runways Impacts on navigational aids*
- *Impacts of infrastructure on airport-based air traffic control services (e.g. Tower visibility).*
- *An airport Master Plan may also address other off-airport planning issues such as ground transport arrangements serving the airport.*

District Plans administered by local authorities under the Resource Management Act 1991 will be critical to the success of the airport Master Plan. The Master Plan needs to both take into account the provisions of the District Plan(s) affecting the airport environs, and be a tool to inform the land use planning processes involved in District Plans.

It is important that on and off airport planning and development are linked and coordinated, and a comprehensive airport Master Plan can certainly assist in achieving this aim."

52 It goes on to note:

"Outside the airport site, appropriate planning controls should be in place to protect the ongoing operation of the airport. If such controls are not already in place the Master Plan should recommend that the relevant Local Government authorities introduce such controls.

Local Government is not necessarily aware of the importance to the air transport network (and consequently national and regional economies) of safeguarding airports to enable them to meet current and future capacity requirements. It is therefore imperative that airports work with Local Government to provide the basis for safeguarding the ongoing capacity of the airport."

53 In Australia, a National Airports Safeguarding Advisory Group (NASAG), comprising of Commonwealth, State and Territory Government planning and transport officials, the Australian Government Department of Defence, the Civil Aviation Safety Authority (CASA), Airservices Australia and the Australian Local Government Association (ALGA), has developed the National Airports Safeguarding Framework. The NZ Airport Good Practice is based on this. The Australian "National Airports Safeguarding Framework" (NASF) is[x]

"a national land use planning framework that aims to:

- *improve community amenity by minimising aircraft noise-sensitive developments near airports; and*
- *improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues."*

"….. The Framework has implications for anyone working in town planning, residential or commercial development, building construction or related industries. It consists of a set of guiding principles with nine guidelines relating to aircraft noise, windshear and turbulence, wildlife strikes, wind turbines, lighting distractions, protected airspace, communication equipment, helicopter landing sites and public safety areas at the end of runways.

It is the responsibility of each jurisdiction to implement the Framework into their respective planning systems. Each state and territory will align their respective planning processes with the Framework principles and guidelines, as appropriate."

54 Useful factsheets as well as the nine Guidelines are available for download at:

- https://www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf/index.aspx
- https://www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf/nasf_principles_guidelines.aspx

55 The main safeguarding topics relevant to the Selwyn District and its specific location and proximity to Christchurch Airport are bird strike and noise. The remainder of this section will focus on these two elements.

Bird strike

56 The Airport Master Planning Good Practice Guide discussed earlier notes that:

> *"The risk to aviation from wildlife in the vicinity of airports needs to be carefully managed — from influencing the use of nearby land to avoid aggravating or attracting a wildlife risk, to day to day actions that can reduce risk. The CAA have published a "Good Aviation Practice" on bird hazards.*
>
> *The Department of Conservation, in conjunction with NZ Airports, has produced guidelines for the management of the risk from birds, including the means to obtain authorisation to disturb or kill protected species at airports where necessary for safety reasons, and this needs to be actioned at a local level to achieve protection for the airport."*

57 The Civil Aviation Authority New Zealand (CAA) is the national government agency that establishes, monitors and enforces civil aviation safety and security standards in New Zealand. The CAA "Good Aviation Practice Guide" notes that:

> *"In the case of aerodromes certificated under Civil Aviation Rules, Part 139 Aerodromes – Certification, Operation and Use, the aerodrome operator is required to have a wildlife management plan to manage the bird hazard. In order to fulfil their responsibilities, they need advice of bird hazards, near misses and strikes. Where possible, aerodrome operators need to work with local authorities to mitigate the risks posed by bird-feeding sites (such as rubbish dumps or landfills) adjacent to the aerodrome."*

58 The Australian Airports Association (AAA) is a parallel organisation to the New Zealand Airports Association. It represents the interests of more than 340 airports and aerodromes around Australia. As well as advocacy for its members it provides resources for professional development and training material for airport staff. Recognizing the importance of engagement with the town planning professionals and

the government agencies implement town planning policy, rules and regulations, provides resources and publications on its website on many aspects of airport safeguarding.

59 This is more developed than the New Zealand guidelines and therefore of particular interest are the following[xi]:

59.1 Airport Practice Note 9: Wildlife Hazard Management at Airports, March 2016

> *"This airport practice note is a nationally applicable, comprehensive guide to creating and maintaining a holistic wildlife hazard management program at Australian airports. The document provides aerodrome operators with an overview of wildlife hazard management principles from operational airfield activities, through to techniques on how to integrate wildlife hazard management into all aspects of the airport business."*

59.2 Airport Practice Note 6: Managing Bird Strike Risk Species Information Sheets, September 2015

> *"These new and revised fact sheets provide aerodrome operators with data and other useful information regarding common wildlife species and how best to manage wildlife hazards at their aerodromes."*

59.3 Airport Practice Note 5: Airport Safeguarding, November 2014

> *"Airports are complex facilities and experience has shown that the town planning issues associated with protecting their ongoing operation are often not well understood by planning practitioners. The purpose of this practice note is to raise awareness of airport safeguarding issues within the planning profession and assist town planners and planning authorities in understanding airports and how to safeguard their ongoing operation."*

59.4 The AAA Airport Practice Note 9: Wildlife Hazard Management at Airports, March 2016 is a comprehensive 96-page document which deals with topics such as: regulatory environment, wildlife hazard management plan, wildlife hazard assessment, wildlife risk assessment, management, report, communicating wildlife hazards, training, evaluating programs and wildlife hazard management as an integrated approach. It starts by outlining the very real and significant risks and consequences to aircraft operations in the vicinity and on an airport from wildlife hazards. It discussed on-airport strategies and methods to identify and mitigate risks. On page 33 it discusses off-airport issues (bold emphasis is that of the author).

> *"Wildlife hazards in the vicinity of airport can vary widely, however anything that attracts, or has the potential to*

attract, wildlife can increase the strike risk. These land uses can include: landfills; sewage treatment works; sports fields; water treatment works; abattoirs; food processing plants; agriculture/farming; water bodies (natural and artificial); parks and gardens; and wildlife breeding grounds/colonies.

ICAO and the Australian Government via the National Airports Safeguarding Framework (Section 2) provide guidelines for land-use compatibility in the vicinity of airports, however site specific investigations are necessary to determine the extent of the wildlife hazard and how it contributes to an airport's strike risk. As such, the establishment of a monitoring program that is commensurate with the level of risk, will help airports to identify location and extent of the hazard.

Land-use beyond the airport perimeter fence can contribute significantly to the strike risk. Managing off-airport hazards is complicated by the lack of management and administrative jurisdiction by the airport authority. *Wildlife hazards can be proactively identified within the planning framework for new airport developments, however existing airports often have to deal with antiquated land use planning and zoning decisions that may have resulted in the establishment of significant wildlife hazards close by. Monitoring and communication are the key tools available to airports to address off-airport hazardous sites."*

Aircraft Noise

60 In New Zealand, the governing standard related to aircraft noise is NZS 6805:1992 Airport Noise Management and Land Use Planning. It is accepted as current best practice for managing airport noise and the interface with other land uses. It has similar methodologies and applications to standards, policies and guidance adopted in most nations with well-developed civil aviation and planning frameworks to minimize and mitigate the adverse impact of aircraft operations on the populations in the vicinity of an airport.

61 Appropriate land use planning is well recognised as the most effective means of mitigation of the impacts of aircraft noise in the vicinity of an airport. Although this obviously has the potential to place restrictions on land use, it does not rule out land development per se, just that it should be compatible. In the areas with highest noise exposure land should remain rural or be developed for industrial uses rather than residential or other sensitive uses such as schools.

62 The ability to consider and enact land use restrictions depends in part on the availability of alternative more appropriate sites to meet community needs which are not directly under aircraft flight paths

or the extended centrelines of an airport runway where noise impacts from take-offs and landings are greatest.

63 Regulations and guidelines controlling land use planning generally include tables of "acceptable" land use within certain zones around an airport. Industrial or rural land use is recommended for the areas likely to be subjected to most noise exposure, while residential and other noise sensitive usages are excluded. As one moves further away from the airport operational areas, aircraft noise related land use controls can be more relaxed.

64 As noted earlier, parts of the Selwyn District are under the arrivals flight paths from the south-west of the airport as they approach to land on the main runway (Runway 02). Other areas are under the departure flight paths as aircraft take-off to the south-east on the main runway (Runway 20) and then turn north heading to domestic destinations on the North Island or other international routes.

65 Where possible future urban growth should be directed away from these areas, and they should be zoned rural or industrial. If possible, future urban densification in zones identified as affected by aircraft noise on these arrival and departure flight paths from the airport should also be avoided. This will minimize noise nuisance to people on the ground and the "reverse sensitivity" effects of affected populations lobbying to restrict operations at the airport both now and in the future.

66 Christchurch Airport, through sound planning, is currently in a position where the urban encroachment within areas affected by aircraft noise and those projected to fall in such areas in the future is relatively limited. Compared with the other primary New Zealand airports of Auckland and Wellington, there is very little conflicting land-use. The number of people within current and projected noise impacted areas in Christchurch is low when compared to these and other similar airports overseas.

67 To ensure that the Airport's primary purpose as an important economic and community asset and that the amenity of the residents of Christchurch, Selwyn and Waimakairiri is preserved, it is vital that long-term land use planning in the vicinity does not compromise the Airport or the community. Any loosening or gap in airport safeguarding through deficiencies in land-use controls will be irreversible. It will result in either, populations living in areas affected by noise from aircraft operations, or pressure for and potential restrictions on airport operations and consequently economic opportunities.

68 Most of the world's major airports and many significant airports in this region (Australasia) suffer from the lack of adequate reservation of surrounding land and appropriate land use planning. This results

in constraints on development, operational flexibility, capacity and in some cases significant environmental problems.

69 This potential land use conflict between an airport and its surrounding community is exacerbated by the requirement to be as close as practical to the urban area being served. Older established airports were likely originally some distance from urban areas, which themselves have expanded into formerly vacant areas adjacent to the airport. At this point it is very difficult and expensive to relocate an airport (if any suitable site could be found within a reasonable distance).

70 Ensuring that the Selwyn District Plan maintains and strengthens appropriate controls on land use in the vicinity of Christchurch Airports achieves the complementary goals of:

70.1 protecting residents from the negative noise impacts of airport aircraft operations; and

70.2 protecting the airport as a community transport and economic asset from noise complaints and pressures to restrict aircraft operations.

Summary

71 Recognising the importance of airports to disaster response and the general importance of New Zealand's airport assets, the New Zealand National Infrastructure Plan 2015 sets out a 30-year vision for New Zealand's key infrastructure, including airports, and notes[xii]:

> *"…the Plan sets out a vision that: By 2045 New Zealand's infrastructure will be resilient and coordinated, and contribute to a strong economy and high living standards"*

72 Protecting airports to enable them to fulfil this role and vision is a key part of developing and maintaining a resilient transport system.

73 The Airports Council International (ACI) as the "Voice of the Worlds Airports" represents its 641 global members who operate 1,957 airports in 176 countries and territories. ACI represents their interests in discussions with international organisations such as the International Civil Aviation Organization (ICAO) in the development of international standards for air transport. ACI develops standards and recommended practices in the areas of safety, security and environment initiatives on behalf of its global membership.

74 In 2018 the ACI World Environment Standing Committee (WEnSC), which provides guidance and resource material for global airport members, prepared a policy briefing paper on Airports' Resilience and Adaptation to a Changing Climate[xiii].

75 At the same time, the "*ACI members adopted a resolution … recognizing the potential impact of climate change on airport infrastructure and operations, and encouraging member airports to conduct risk assessments, develop mitigation measures and communication channels, and take climate resilience and adaptation into consideration for their master plans.*"

76 The policy brief clearly articulated that "*An airport is a business, multimodal transport interchange, employment node, and essential piece of regional and national infrastructure for the communities it serves. As an essential service provider to a wide range of stakeholders and users, the airport infrastructure and operations must have high levels of availability, reliability and resilience. Vulnerabilities to ongoing services from short- and long-term projected climate changes must be identified as part of a responsible business continuity plan.*"

77 The brief noted the importance in planning for "*coordination with broader airport stakeholders and surrounding communities. An inclusive, systematic approach to collect intelligence, assess risks, and interact proactively with these stakeholders will help mitigate long-term financial, economic and operational impacts.*"

78 Disruption at an airport could have network wide effects at the national level, impacting the national economy and national resilience.

THE FUTURE OF AVIATION

79 Aviation has historically been a long-term growth industry. However, events over the last year or more could have created some uncertainty in the short to medium term. The global COVID-19 pandemic has had significant consequences for the aviation industry. On one hand international passenger travel basically ceased, but the importance of air freight, including shipments of vaccines has never been more evident.

80 Domestic aviation in New Zealand seems to have rebounded very quickly over the past 6 months close to or even in advance of pre-pandemic levels in some areas, even while international flights are still limited.

81 There is also a clear future for aviation as the country and the world decarbonises and responds to climate change. Globally and locally, there is a tangible drive to transition aviation towards the goals of a net zero carbon environment. For example, Greg Foran, the CEO of Air New Zealand stated in July 2021: *"… it was possible the national carrier could be flying an electric aircraft commercially within three years."*

82 It is my opinion, aligned with many of the aviation industry leaders, that while the exact pathway and timeframe for the aviation industry to recovery from the pandemic is not yet clear, in the longer term, enabled by technological advances, it will return to pre-pandemic levels of activity and demand will then continue to build. The industry seems committed to a "sustainable recovery", and the various industry players are moving beyond strategy into setting defined goals and pathways to meet them.

83 As noted in previous chapters, the safeguarding of essential aviation infrastructure from the effects of reverse sensitivity must take a conservative approach. Incompatible land uses in the vicinity of airports should be strongly discouraged. This is most critical under the immediate arrival and departure flight paths when aircraft are at lower altitudes approach the runway or taking-off from the runway but extends into areas that adjoin these. Planning for short-term expediency creates facts on the ground that are very difficult, expensive and usually impossible to reverse. This is to the determent of the community and wider region that the airport serves.

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Sebastian Hawken

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[i] https://www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf/index.aspx (accessed 14/07/2021)

[ii] https://www.transport.govt.nz/statistics-and-insights/air-and-sea-transport/sheet/air-freight (accessed 14/07/2021)

[iii] https://www.christchurchairport.co.nz/about-us/who-we-are/gateway-to-antarctica/ (accessed 14/07/2021)

[iv] https://www.comnap.aq/our-members/programma-nazionale-di-ricerche-in-antartidepnra/ (accessed 14/07/2021)

[v] https://www.stuff.co.nz/national/125725259/air-force-carries-out-nighttime-medical-evacuation-from-antarcticas-mcmurdo-station (accessed 14/07/2021)

[vi] https://www.boeing.com/resources/boeingdotcom/company/about_bca/pdf/statsum.pdf (accessed 14/07/2021)

[vii] https://www.transport.govt.nz/assets/Uploads/Policy/National-Airspace-Policy-of-New-Zealand-April-2012.pdf (accessed 14/07/2021)

[viii] https://www.nzairports.co.nz/assets/Files/public/NZ-Airports-Submission-on-the-Urban-Development-Bill2.pdf (accessed 14/07/2021)

[ix] https://www.nzairports.co.nz/assets/Files/public/Airport-Master-Planning-NZ-Airports-Feb-2017-FINAL2.pdf (accessed 14/07/2021)

[x] https://www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf/index.aspx (accessed 14/07/2021)

[xi] https://airports.asn.au/airport-practice-notes/ (accessed 14/07/2021)

[xii] https://www.treasury.govt.nz/publications/infrastructure-plan/thirty-year-new-zealand-infrastructure-plan-2015 (accessed 14/07/2021)

[xiii] https://store.aci.aero/product/policy-brief-airports-resilience-and-adaptation-to-changing-climate/ (accessed 14/07/2021)