

# The effects of birdlife on aviation operations

## *How airports and birds co-exist (a 'pilot's eye view') – Avifauna: Part II*

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### Birdlife near the airport site is a key consideration

Avifauna (birdlife) is a key consideration at every airport around the world. This project carefully examines avifauna from two perspectives:

1. The potential effects of a new regional airport on birdlife in their natural habitat (a 'bird's eye view').
2. The effects of birdlife on aviation operations (a 'pilot's eye view').

Christchurch Airport has engaged experts to undertake preliminary, desktop research of the existing information regarding the current avifauna associated with the site and the wider landscape. A radius from the site of approximately 50-kilometres was selected as the basis of that initial analysis.

The preliminary findings and observations of that work are explained in a second information paper entitled *'The effects of aviation on birdlife in their natural habitat; How airports and birds co-exist (a 'bird's eye view') – Avifauna: Part I'*.

This information paper takes into account those observations and focuses on the effects birdlife could have on aeronautical operations in the vicinity of the proposed airport site, in particular bird strike.

Further, more detailed, analysis is now underway and will take approximately 12 months.

### Bird strike is rare but it poses a serious threat

Collisions between birds and aircraft are rare but they can pose a serious threat to an aircraft and safety issues for passengers and aircrew.

An aircraft's engines can stop working if a bird as small as half a kilogram is sucked into them. Larger birds can breakthrough windshields. There is a strong correlation in New Zealand's reported airstrike incidents between body mass and the likelihood of damage occurring to aircraft.

The United Nations' specialised agency the International Civil Aviation Organisation (ICAO) estimates approximately 10% of bird strikes result in damage to aircraft.

Because of the risk to human life, ICAO requires its 190 member countries to mitigate the risk of bird strike. New Zealand's Civil Aviation Act and Civil Aviation Rules require airports to actively manage this risk.

**A US study estimated the majority (58.2%) of bird deaths from anthropogenic sources was the result of collisions with tall buildings. Collisions with aircraft accounted for less than 0.01% of deaths.**

### These rare incidents tend to occur at low altitude during take off and landing

90% of bird strikes at airports occur, according to ICAO, when aircraft are landing or taking off.

Between 50% and 60% occur at zero to 50 feet above ground, with another 30% occurring between 50 and 500 feet above ground. Almost twice as many strikes occur during the landing phase of flight than take-off.

Preliminary analysis shows departing aircraft would be more than 500 feet above ground when they cross the site's boundary. It also shows arriving aircraft would be within 1 and 2 kilometres of the site when they descend below 500 feet.

The Bendigo Wetland sits beneath a potential aircraft flight path approximately 9km to the south-west of the site.

## Airports and birds can co-exist in close proximity to one another

Airports are often located near bodies of water and grasslands or have large expanses of grass within their boundaries – features that are attractive to birds.

Coastal airports often have a higher level of birdlife activity than inland locations, like the proposed regional airport site at Tarras.

A number of New Zealand airports are located in close proximity to significant birdlife populations. For example:

- Auckland Airport is surrounded by the intertidal mudflats of the Manukau Harbour, an internationally and nationally significant site for thousands of shorebirds.

- Napier Airport is situated near the Ahuriri Estuary which is utilised by over 70 species of resident and migratory waterbirds.
- Nelson Airport is adjacent to the Waimea Inlet where some 52 estuarine species have been recorded on the tidal flats and saltmarsh areas.
- Christchurch Airport is located to the south of the nearby Waimakariri River, parts of which are home to breeding colonies of black-billed gulls.

ICAO has set clear rules around mitigating the risk of bird strike which New Zealand has adopted through the Civil Aviation Act and Civil Aviation Rules.

## New Zealand's birdlife is legally protected

New Zealand has more than 200 native bird species with some of these found nowhere else in the world.

Most bird species in New Zealand, whether native or introduced, are legally protected. To manage populations or the adverse effects they might cause, some species are given lesser levels of protection. These species and the levels of protection afforded to them are set out in schedules to the Wildlife Act 1953.

Airports are not able to make their own independent decisions on managing Threatened species even if they may pose a risk to aircraft operations. Overall responsibility for the management and control of wildlife in New Zealand rests with the Department of Conservation (DOC).

A framework for the management of bird species is in place with strict requirements imposed on airports. DOC recognises airports have shown themselves to be 'good

at balancing the needs of aviation safety with minimising impacts on protected wildlife.'

In line with international protocols, the Civil Aviation Authority (CAA) requires airport operators to establish environmental management programmes for managing wildlife hazards, including birds, and has published a 'Good Aviation Practice' guide on bird hazards in conjunction with DOC.

The death of birdlife, particularly Threatened species, is a last resort that only DOC may authorise and that authorisation may be subject to conditions. Where a bird on the DOC list of notified species is killed at an airport, the department requires it to be double bagged, carefully labelled and frozen so a post-mortem can be carried out.

Airports are audited to ensure compliance with these rules.

## Airports work alongside numerous authorities, DOC and wildlife experts to manage avifauna

Airports are required by Civil Aviation Rule Part 139 to have a Birdlife Hazard Management Programme for minimising or removing bird strike risk.

An effective programme takes a holistic and integrated approach, starting with an assessment of all the bird species in the area.

It involves a number of partners, including the DOC, ornithologists and biologists.

The Civil Aviation Authority actively records bird strike and 'near miss' incidents for all of New Zealand, providing regular formal feedback to airports on their performance in terms of reported incidents.



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## The landscape near the proposed airport site contains bird habitats

A number of water bodies exist within the landscape near the proposed airport.

The Dunstan Upper Clutha River is recognised as an Important Bird Area due to the presence of a number of Threatened or At Risk species. It is also a breeding area for a number of species.

Bendigo Wetland, at the northern end of Lake Dunstan, is located approximately 9 km to the south-west, and beneath a potential aircraft flight path.

The Lindis River is not classified as a braided river, however, the lower 1.5 km delta area is braided when the river has sufficient flow and this accommodates breeding and roosting of birdlife.

Each of these areas is likely to be relevant in the take-off and landing phase of the aircraft.

This will be carefully analysed and assessed by the project team.

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## More detailed analysis is required and underway

Christchurch Airport is using qualified experts to carefully and thoroughly scope the potential impacts.

A draft Birdlife Hazard Management Plan will, in time, be developed as part of planning and validation investigations.

The investigations will assess the magnitude of the birdstrike risk and identify the mitigations that are available.

In order to put this together, experts are:

- Gathering more detailed information on the avifauna assemblages present on the proposed site and in the wider landscape.

- Comprehensively assessing the effects, both direct and indirect, on avifauna.
- Awaiting the selection of a preferred runway alignment and the design of take-off and approach paths and flight altitudes over the wider landscape.

Further, more detailed, analysis will inform the birdstrike assessment and, ultimately, the draft plan. The analysis will take approximately 12 months.