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# **Guidance material for land use at or near aerodromes**

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## **Overview**

The environment at and surrounding an airport has unique characteristics that impact on land use. Specific requirements for the operation of aircraft, airport design and airspace management are covered in the Civil Aviation Act 1990 and Civil Aviation Rules. The regulatory oversight of these requirements is undertaken by the Director of Civil Aviation and the Civil Aviation Authority of New Zealand.

New Zealand is a signatory to the Convention on International Civil Aviation (the Chicago Convention) which is a set of international requirements for civil aviation coordinated through the International Civil Aviation Organisation (ICAO). New Zealand has adopted the ICAO standards and recommended practices as the basis for New Zealand Civil Aviation Rules (CARs).

Aerodrome operators in New Zealand should monitor and review land use activities around their aerodrome to ensure the safe operation of aircraft and protection of airspace. Those persons making changes to land use must ensure that they comply with any applicable CARs, local authority planning requirements and work with aerodrome operators in land use changes.

The following provides guidance for those persons proposing land use changes around aerodromes and identifies specific points to be taken into account.

## **Glossary**

### **Aerodrome—**

- (1) means any defined area of land or water intended or designed to be used either wholly or partly for the landing, departure, and surface movement of aircraft; and
- (2) includes any buildings, installations, and equipment on or adjacent to any such area used in connection with the aerodrome or its administration.

(An aerodrome includes a heliport)

**Civil Aviation Rules** means rules made under the Civil Aviation Act.

## **Types of Aerodromes**

Many aerodromes in New Zealand hold a Civil Aviation Rule Part 139 aerodrome operating certificate. These include international and large domestic aerodromes. The Part 139 certificate is required for aerodromes where aircraft with more than 30 passenger seats operate regular air transport operations. Aerodromes that do not meet the more than 30 passenger seat criteria may also hold a Part 139 certificate. The Part 139 certificate requires the aerodrome operator to comply with a range of rules and requirements including ongoing CAA oversight.

Under Part 139, there are two specific requirements to be met for land use; Obstacle Limitation Surfaces and Wildlife Hazard Management.

The remainder of New Zealand's aerodromes are non-certificated. The only CAR requirements on a non-certificated aerodrome are those that form part of the operating requirements for any airline or aircraft operator that uses the aerodrome.

## **Obstacle Limitation Surfaces**

Under CAR 139.51 an aerodrome operator must have in place obstacle limitation surfaces for the aerodrome that are defined surfaces in the airspace above and adjacent to the aerodrome. These obstacle limitation surfaces are necessary to enable aircraft to maintain a satisfactory level of safety while manoeuvring at low altitude in the vicinity of the aerodrome. These surfaces should be free of obstacles and subject to control such as the establishment of zones, where the erection of buildings, masts and so on, are prohibited.

More information on obstacle limitation surfaces (OLS) can be viewed online at [www.caa.govt.nz](http://www.caa.govt.nz) under Advisory Circulars.

For Part 139 certificated aerodromes the OLS requirements can be found in Chapter 4 of CAA Advisory Circular AC139-6.

For non-certificated aerodromes the OLS requirements can be found in Chapter 3 of CAA Advisory Circular AC139-7.

For heliports the OLS requirements can be found in Chapter 4 of CAA Advisory Circular AC139-8.

The OLS surfaces are normally published in the local District Plan and can also be sourced directly from the aerodrome operator.

It is important that any proposed building or structure does not infringe required OLS areas. Consultation with the aerodrome operator and the relevant local authority at an early stage is essential.

## **Wildlife Hazard Management**

Under CAR 139.71 an aerodrome operator must establish an environmental management programme to minimise or eliminate any wildlife hazard that presents a hazard to aircraft operations at their aerodrome in areas within their authority.

The management of wildlife, especially birds, is critical for aircraft operational safety. Bird strikes put the lives of aircraft crew members and their passengers at risk. In the United States over 7,500 bird and other wildlife strikes were reported for civil aircraft in 2007. Bird and other wildlife strikes to aircraft annually are estimated to cause well over \$600 million in damage to civil and military aviation in the United States alone.

It is important that land use changes are monitored and reviewed by the aerodrome operator in areas outside their immediate control to ensure that these land use changes do not increase wildlife hazards for the aerodrome.

Garbage disposal dumps and other sources that may attract wildlife activity on, or in the vicinity of, an aerodrome, need to be assessed as a potential source of wildlife hazard. It is

an International Civil Aviation Organisation requirement that such activities are closely managed by the controlling authority. If necessary an aeronautical study may need to be undertaken to assess the potential wildlife activity hazard.

Examples of wildlife attractants include:

- Refuse Dumps and landfills
- Sewage Treatment and Disposal
- Agricultural - cultivation of land, types of activity e.g. pig farming.
- Fish processing plants
- Cattle feed lots
- Wildlife refuges
- Artificial and natural lakes
- Animal farms
- Abattoirs and freezing works

Proper planning of these activities and their impacts on wildlife should be undertaken. It should be noted that aircraft approach and departure areas may extend for a distance from the aerodrome runway, therefore wildlife impacts on aircraft activities may not be immediately apparent. Consult the aerodrome operator as early in the planning as possible.

The International Civil Aviation Organisation provide specific environmental management and site planning information on the following:

### **Refuse dump or landfills**

If a refuse dump is proposed in the vicinity of the aerodrome there may be a requirement to provide bird control at the site to reduce the attractiveness to birds. The potential threat to aircraft depends on location relative to airport and flight paths, type of refuse, and the types of birds expected in the vicinity.

The ICAO Bird Control and Reduction Manual recommends that refuse dump sites be located no closer than 13 kilometres from the airport property. The proper siting of refuse dumps can reduce hazard and any location should be analysed by a group of specialists on bird problems.

### **Water**

Surface water is a large bird attractant and developments that have drainage ditches, artificial waterways and large areas of water close to an aerodrome may attract birds and other wildlife.

In the ICAO Bird Control and Reduction Manual it is noted that in the vicinity of an aerodrome artificial and natural lakes increase the bird strike hazard depending on the size and the shape of the lake, its ecological state and the surroundings. It is recommended that

an ornithologist/biologist evaluate the ecological conditions of the whole vicinity as well as migration in the area. The bird strike hazard can be reduced if the lake is made smaller and the shores steeper, and if fishing, hunting and water sports are forbidden. Filling a lake with soil or covering the surface with wires and nets are two of the better solutions to the problem.

## **Notice of Intention to Construct, Alter, Activate or Deactivate an Aerodrome**

Civil Aviation Rule Part 157 requires that prior notice be given to the Director of Civil Aviation whenever a person intends to construct, alter, activate or deactivate an aerodrome. This notice will enable the Director to identify whether the use of the airspace associated with the aerodrome proposal will be a hazard to other established airspace users. It will also allow identification of problems to do with the safety of persons and property on the ground.

It is also necessary to consider efficient use of airspace at an early stage. The Director, after receiving such notice, will give advice on the effects the proposal would have on the use of navigable airspace by aircraft and on the safety of persons and property on the ground. An aeronautical study will be undertaken and a determination on the proposal made.

The Part 157 rule requirements and Part 157 Advisory Circular are available on the CAA web site [www.caa.govt.nz](http://www.caa.govt.nz)

There is also a Part 157 information leaflet available from CAA or at: [http://www.caa.govt.nz/aerodromes/Aero\\_Studies\\_Pt157\\_info.pdf](http://www.caa.govt.nz/aerodromes/Aero_Studies_Pt157_info.pdf)

## **Objects and Activities Affecting Navigable Airspace**

Civil Aviation Rule Part 77 prescribes rules for a person proposing to construct or alter a structure that could constitute a hazard in navigable airspace; or use of a structure, lights, lasers, weapons, or pyrotechnics, that could constitute a hazard in navigable airspace.

There are several areas that require a Part 77 application for a determination on such objects and activities including:

- A structure that extends more than 60 m in height above the ground level at its site.
- A structure that exceeds the general tree height in the area by 18 m and is located in an area of low level aerial activity or other low flying activity, or in a low flying zone or low level route as prescribed under Part 71.
- A structure that is located below the approach or take-off surfaces of an aerodrome as defined in Part 77.
- A structure that penetrates the obstacle limitation surface of an aerodrome.

- A person proposing to use a structure that may discharge efflux at a velocity in excess of 4.3 m per second through an obstacle limitation surface of an aerodrome or higher than 60 metres above ground level.
- A person proposing to operate a light or a laser if the light or laser is liable to endanger aircraft.
- A person or organisation that proposes to use a weapon that fires or launches a projectile that has a trajectory higher than 45 m if within 4 km of an aerodrome boundary, or 120 m if more than 4 km from an aerodrome boundary.
- A person who proposes to stage a pyrotechnics display that involves the firing or launching of a projectile that has a trajectory higher than 45 m if within 4 km of an aerodrome boundary or 120 m if more than 4 km from an aerodrome boundary.

A person proposing to construct or alter a structure must notify the Director of Civil Aviation 90 days before the proposed date of commencement of construction or alteration. The specific requirements are detailed in Civil Aviation Rule 77.13.

An aeronautical study will be undertaken and a determination on the proposal made.

Full details and information on Part 77 requirements are available in the Part 77 Rule which can be accessed at the CAA web site [www.caa.govt.nz](http://www.caa.govt.nz).

## **Noise Issues**

Noise issues to do with aerodromes are the responsibility of the local controlling authority and the CAA does not have any statutory function in relation to aircraft or aerodrome noise. The Minister does produce rules relating to noise abatement measures under Civil Aviation Rule Part 93 which are published on behalf of the aerodrome operator from local authority requirements.

## **Local Authority Zoning**

The CAA encourage local authorities to protect aerodromes in their areas to ensure the long term sustainability of the aerodrome, the safety of the aircraft operations, and the safety of persons and property. In addition to the required obstacle limitation surfaces other areas can be specifically zoned to assure that future uses of the land are compatible with airport operations and to protect persons and property. Zoning solely to obstacle limitation surface is insufficient to prevent the construction of incompatible uses such as housing or uses that attract congregations of people in the approach areas.

In the United States a runway protection zone (RPZ) is used by many local authorities for the protection of people and property on the ground. Compatible land use within the RPZ is generally restricted to such land uses as agricultural, golf course, and similar uses which do not involve congregations of people or construction of buildings or other improvements that may be obstructions. Land uses prohibited from the RPZ are residences and places of public assembly including churches, schools, hospitals, office buildings and shopping centres.

## **Summary**

Aerodromes have an important role in aviation safety in particular the safety of aircraft and passengers. In New Zealand the Civil Aviation Authority oversees aviation safety based upon international aviation requirements. It is important that persons wanting to alter land use near an aerodrome do so in consultation with the aerodrome operator, the relevant local authority and, where necessary, the Civil Aviation Authority.

It is important that land use changes near aerodromes are also compliant with any Civil Aviation Rule requirements.

## **Contacting the CAA**

The Aeronautical Services Unit of the CAA has responsibilities for the oversight of the services supporting the New Zealand aviation system. The unit is responsible for certification and surveillance of aerodromes and heliports, and air traffic, telecommunications, navigation, meteorological and aeronautical information services.

The unit also has responsibilities regarding airspace and Part 77 determinations for objects affecting navigable airspace, such as structures, fireworks, unmanned balloons, kites and model aircraft. They can offer advice on matters relating to Part 139 certificated aerodromes and Part 157 aerodrome determinations.

They can be contacted by phoning the CAA on 04 560 9400 or through specific contact details on the CAA web site [www.caa.govt.nz](http://www.caa.govt.nz)