

AIRPORT OPERATORS ASSOCIATION
&
GENERAL AVIATION AWARENESS COUNCIL
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SAFEGUARDING OF AERODROMES

Advice Note 3

Potential Bird Hazards from Amenity Landscaping and Building Design

1. Introduction

Aerodrome safeguarding ensures the safety of aircraft and their occupants when in the vicinity of an aerodrome by controlling potentially hazardous development and activity around it. An overview of the Safeguarding process is given in the first Advice Note in this series. This Note considers in particular the need to minimise bird attractant features of landscaping proposals and building design in the vicinity of an aerodrome.

Aircraft are vulnerable to birdstrikes, i.e. collisions with large and flocking birds. They cost the aviation industry around £750 million per year in damage and delays to aircraft and are a major hazard. Occasional catastrophic losses have resulted in over 225 deaths and 70 aircraft destroyed in civil aviation. Over 80% of birdstrikes occur on or close to aerodromes and their operators are required to take necessary steps to ensure that the birdstrike risk is reduced to the lowest practicable level.

Many of the design features of building developments and their associated landscaping are commonly attractive to birds, particularly tree and shrub planting, and the creation or enhancement of a water feature. Therefore, where features attractive to birds are included in a proposed development on an aerodrome or the surrounding environment, it is essential that the hazard to aviation posed by these birds is addressed.

2. Safeguarding Consultation

In order to protect aerodromes against these hazards, safeguarding maps lodged with Planning Authorities include a 13 km radius dotted circle centred on the aerodrome to indicate the area within which developments that might attract birds require consultation with the aerodrome.

3. Landscaping Hazards

Landscaping may attract birds by providing feeding, nesting and roosting habitat. Almost by definition, landscaping increases and diversifies the habitats available for wildlife that, inevitably, are exploited by larger numbers of more bird species for a wider range of activities. Water features, including the enhancement of existing wet areas or watercourses, or creating new lakes, ponds or drainage channels, also create a wide range of exploitable habitats for birds. The intended effect may be functional, ornamental or the development of some form of local nature reserve. Pressure from

conservation groups and local 'Biodiversity Action Plans' often results in moves to enhance many types of water feature and this almost always increases its potential to attract birds.

Significant hazards associated with landscaping schemes are their potential to:

- a) Create dense vegetation that may become a Starling roost or provide roosting and nesting habitats for Rooks, Woodpigeon and other aviation-hazard bird species.
- b) Provide an abundant winter food supply in the form of fruits and berries for large flocks of Starlings, Fieldfares and Redwings, which may also move onto an adjacent aerodrome to feed on soil invertebrates.
- c) Create standing water or watercourses that attract gulls and other waterfowl, which are nearly all large or very large, and cause increased bird movements between existing waters and the new site, over and around the aerodrome.

4. Safeguarding Strategy

Where a proposed development within 13 km of an aerodrome has the potential to attract birds, the developer will be expected to have undertaken a bird hazard assessment to identify the risk of hazardous bird species being attracted to the development.

Where a significant risk is identified, the developer will be expected to modify their proposals to mitigate this risk. It is possible that as part of the mitigation, it will be necessary to produce and implement a Bird Hazard Management Plan acceptable to the aerodrome concerned.

To avoid the need for modifying proposals it is suggested that developers consult with aerodromes at a preliminary stage and follow the design advice provided below.

5. Detailed Advice On Landscaping Design

The following advice is offered in order to reduce the potential attractiveness of landscaping schemes to hazardous bird species.

a) Starling Roosts

A potentially hazardous consequence of a landscaping development is the formation of a Starling roost. Roosts are widely separated but there are concentrated movements in their immediate vicinities involving very large numbers each dawn and dusk. Creating conditions for a large roost close to an aerodrome is, therefore, an unacceptable hazard.

To minimise the potential attractiveness of the proposed site, planting density should be at 4m centres or greater. Thinning out should be undertaken if necessary to ensure this is maintained. If the proposed planting is intended to provide a screening function, staggered planting in rows may be required. Blocks of planting should also be avoided, especially in sheltered areas and sites isolated from human disturbance e.g. traffic islands.

If a roost does become established the aerodrome may seek immediate remedial action, either in the form of a drastic thinning out of the planting, or its complete removal. Where considered necessary, this action should be anticipated by adding a condition to any planning permission that may be granted.

b) Rookeries

Measures should be taken to minimise the probability of a rookery becoming established close to the aerodrome. Although not guaranteed to prevent a rookery being established, stands of trees with the potential to grow in excess of 20m high should not be included in planting schemes within 3 km of an aerodrome. However, Rooks now colonise not only the traditional small stands and rows of tall trees, but also much lower trees, often less than 10m in height, and isolated larger trees. If a rookery were to become established, the aerodrome may seek immediate remedial action, either in the form of drastic thinning out of the planting, or its complete removal. Where considered necessary, this action should be anticipated by adding a condition to any planning permission that may be granted.

c) Fruits and Berries

Berry bearing trees and shrubs are attractive to a variety of flocking bird species that may then move onto aerodromes; they are, therefore, of some concern.

Large quantities of berry-bearing species should be avoided. If they are essential to the integrity of the proposed planting scheme, low numbers of berry-bearing plants may be dispersed amongst other species to reduce the total food supply for birds.

The species selection and planting patterns become more critical as planting is placed closer to the aerodrome. Berry-bearing species should not be included in planting schemes under approach paths or in the immediate vicinity of an aerodrome.

d) Water

Open standing water and watercourses attract waterfowl which are sufficiently large and numerous to be a significant hazard. Wherever possible, open water should be eliminated from an aerodrome and its immediate surroundings. Landscaping proposals on and in close vicinity to the aerodrome should avoid the inclusion of water features including 'wildlife ponds'.

The severity of the hazard created by a proposed water feature will vary with the size and nature of the water body, its location relative to the aerodrome, existing water areas and waterfowl feeding sites. The number of water features within a local area has a cumulative effect on the hazard posed.

Where water features are absolutely necessary, measures to reduce the ecological diversity of water features and minimise their usefulness to waterfowl should be adopted and should include all of the following, where applicable:

- (i) **Depth:** water should be at least 4m deep with steeply shelving (preferably vertical) margins, to minimise or eliminate bottom-growing vegetation.
- (ii) **Perimeter:** banks and edges are a source of ecological diversity and important for feeding, loafing and nesting. Their extent should be minimised by the shape being as close as possible to circular, without bays, promontories and islands.
- (iii) **Banks:** as in (ii) above, banks should be steeply shelving with minimal vegetation and cover. If possible, there should be a vertical lip or fence to prevent birds from walking in and out of the water.
- (iv) **Fish:** the water should not be stocked with fish, which attract fish-eating birds; nor should angling be permitted because of the food incidentally provided in the form of ground bait, discarded sandwiches, etc.
- (v) **Netting:** it may be possible to enclose smaller ponds with netting to exclude birds. In this way, small but ecologically diverse ponds designed for educational purposes may be acceptable.
- (vi) **Surroundings:** dense vegetation provides nesting cover and short grass is grazed by wildfowl. Paving or a long grass regime (c200mm) similar to that developed for aerodromes would be more acceptable. The grass could be managed as a meadow for wildflowers and butterflies, however, a wet meadow would attract feeding ducks and nesting waders, and should be avoided.

Further guidance on bird hazards associated with landscaping and their mitigation is contained in *Civil Aviation Publication CAP 680 Aerodrome Bird Control*, particularly Part 2 Chapter 5 Para 5.3 and Part 4 (available on CAA website <www.caa.co.uk/publications>).

In addition further information is available on the bird hazards associated with landfill sites and sustainable urban drainage schemes in other advice notes in this series, **Advice Note 5 – Potential Bird Hazards from Landfill Sites** and **Advice Note 6 - Potential Bird Hazards from Sustainable Urban Drainage Schemes (SUDS)**.

6. Design of Buildings - On or In Close Vicinity to Aerodromes

Buildings do not provide a food source in themselves; however, buildings may be used by birds depending upon the design and use of the building and the availability of food in the nearby environment. Pigeons and Starlings are the most common birds to be found in and around buildings. Pigeons make use of ledges of buildings to roost whilst Starlings may roost both on and in buildings in vast numbers. Gables and other complex structures offer potential perches and Swallows and Swifts will nest inside roof spaces and inside buildings to which they can gain access, such as hangars and cargo sheds. Gulls may nest on flat roofs.

Wherever possible buildings in close proximity to the aerodrome should incorporate the following measures to minimise their attractiveness to birds:

- Prevention of access to the building, including the roof space.
- Self-closing doors to prevent access by birds or openings should have plastic strip curtains fitted.
- Waste disposal containers should be self closing to prevent access for birds.
- Food outlets and cafes should not have open litter bins or any areas where waste food is available to birds.
- Steeply pitched roofs to deter breeding gulls.
- Roof overhangs kept to a minimum.
- Ledges beneath overhangs and external protrusions should be avoided.

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Advice Note 1: Safeguarding - An Overview

Advice Note 2: Lighting near Aerodromes

Advice Note 4: Cranes and Other Construction Issues

Advice Note 5: Potential Bird Hazards from Landfill Sites

Advice Note 6: Potential Bird Hazards from Sustainable Urban Drainage Schemes (SUDS)

Advice Note 7: Wind Turbines and Aviation