` **CAC-14-07**

Civil Aviation Circular

on

Aerodrome Wildlife Hazard Mitigation& Management System

For
Flight Standard and Regulations Divisions

Version 2.0

11 May 2017

Civil Aviation Authority of Bangladesh

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RECORD OF AMENDMENT AND CORRIGENDA

Version Number	Chapter changed	Pages Replaced	Date	Signature

FOREWORD

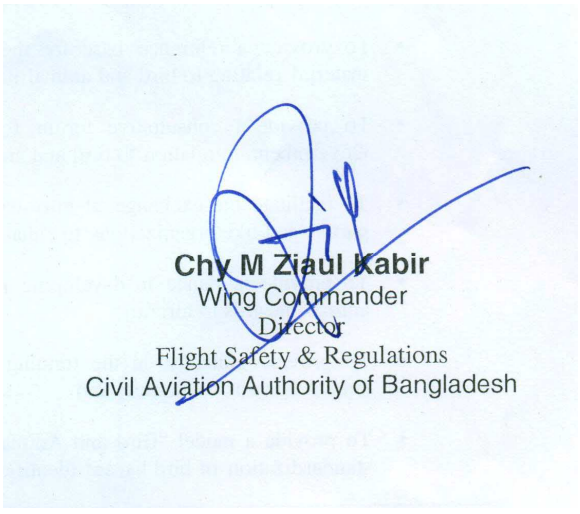
In exercise of the powers conferred by Rule 4 of Civil Aviation Rules 1984 (CAR 84), and so delegated by the Chairman of Civil Aviation authority, Bangladesh (CAAB), Director Flight Safety & Regulations (DFSR) is pleased to issue this Civil Aviation Circular(CAC-14-07) on Aerodrome Wildlife Hazard Mitigation & Management System, at Aerodrome.

An Aerodrome certificate holder is expected to comply with the Rules laid down in the Civil Aviation Rules 1984 and Specifications of Manual of Aerodrome Standards (MAS), Bangladesh. There may be some circumstances where compliance of requirement have not been followed at an existing aerodrome because of physical constraints and where the facility had been provided earlier as per old regulations and continued to be in operation. Similarly there may be situation where compliance is not possible also for a new aerodrome due to physical constraints. These situations require CAA, Bangladesh to have procedures for Establishment and Implementation of Safety Management System in Aerodrome Operations at Aerodrome for non-compliance in respect of an aerodrome being issued with a certificate.

This Circular is issued under Rules 4 of CAR 84 and in accordance with the provisions contained in Manual of Aerodrome Standards (MAS) Article 9.4 and stipulates the procedures for application of Safety Management System in Aerodrome Operations with SARPs of MAS CAAB.

The responsibility for the technical matters within this Circular CAC-14-07 is the responsibility of the Flight Safety and Regulations Division of CAAB.

This CAC is issued and amended under the authority delegated by the Chairman of Civil Aviation Authority, Bangladesh.



1. BACKGROUND

The bird strikes are reported since 1908. ICAO started collecting bird strike data since 1965 and in 1980 the Organization introduced the automated notification process IBIS (ICAO Bird Strike Information System). Up to now, ICAO has gathered information on more than 78000 bird strikes from more than 190
States (countries) and has conducted several workshops on bird strikes. In this regard besides the Annex
14, ICAO has produced three manuals with recommendations that focus on the bird strike issue.

Based on the above information, it becomes necessary for CAAB to store good statistical data on bird strikes around Bangladesh.

CAAB puts a tremendous effort to reduce bird strike in the vicinity of aerodromes to acceptable level of safety (ALOS), however, there is still a long way to go through in this matter. CAAB is in the practice of sending the annual bird strike report to ICAO head office.

2. The National Civil Aviation Wildlife/Bird Hazard Control Committee of Bangladesh (NCAWBHCCB):

The National Civil Aviation Wildlife/Bird Hazard Control Committee of Bangladesh has been established to comply with the Airport Service Manual part 3, ICAO Annex-14 and CAR 84 Rule 317.

3 The current Terms of Reference for the NCAWBHCCB is to:

- Enhance awareness of the safety issues surrounding bird and animal strikes; provide an opportunity for bird and animal strike information, knowledge and advice to be shared; and to determine directions for future research, regulations and procedures to mitigate the risk posed by birds and animals to aircraft."

The current Aims of the NCAWBHCCB is to:

- To provide a reference base for the collection, storage and dissemination of reference material relating to bird and animal hazards to aircraft;
- To provide a consultative forum for the development of legislation, at all levels of Government, in relation to bird and animal hazards;
- To facilitate the exchange of information on bird and animal hazards between interested parties and like organizations to enhance the safety of the aviation industry;
- To provide guidance in developing new research resulting in the reduction of bird and animal hazards to aircraft;
- To provide guidance in the training of industry partners in the reduction of bird and animal hazards to aircraft; and
- To provide a model "Bird and Animal Hazard Management Program" to industry for the standardization of bird hazard identification, reporting and mitigation measures.

- To provide advice on trends and other bird and animal hazard matters relevant to the aviation industry.

- To provide a register of bird and animal hazard control measures used within the Civil Aviation Authority, Bangladesh industry.

- To ensure the production of regular standardized reports on bird and animal hazards.

- To investigate the possibility of implementing a system in Bangladesh

- To liaise with other Bird and Animal Strike Committees or Groups throughout the Region.

4. The National Civil Aviation Wildlife/Bird Hazard Control Committee of Bangladesh: *Membership* is made up of the following agencies, organizations and companies:

Chairman:

- Secretary, Ministry of Civil Aviation and Tourism, Peoples Republic of Bangladesh.

Member:

- Joint Secretary, Ministry of Livestock and Fisheries, Peoples Republic of Bangladesh.
- Joint Secretary, Ministry of Environment and Forestry, Peoples Republic of Bangladesh.
- Joint Secretary, Ministry of Agriculture, Peoples Republic of Bangladesh.
- Director (Operation) Bangladesh Armed Forces Division.
- Director (Operation), Bangladesh Air Force.
- Additional IGP, Bangladesh Police HQ, Dhaka.
- Managing Director, Biman Bangladesh Airlines Limited.
- Chairman Air Operator Committee, Hazrat Shahjalal International Airport, Dhaka.
- President, Bangladesh Airlines Pilot Association (BAPA).

Member Secretary:

- Chairman, Civil Aviation Authority, Bangladesh.

4.1 Major Functions of the Committee:

a) Taking into consideration of standards and provision contained in ICAO Airport Services Manual: part 3, National Civil Aviation Wildlife/Bird Hazard Control Committee of Bangladesh shall serve as a focal point to deal with the analysis of wildlife/bird problem in the airports of Bangladesh.

b) It shall make provision of Act, Rules and Regulations and implement them to make airport bird control program more effective.

c) Identify the nature and cause of the bird problem at airports and take necessary steps to solve the

Problem based upon research and study of the problem.

d) In order to control birds problem by distracting them from the airports the committee shall issue directive on the waste disposal management.

e) Carryout inspection and monitoring of bird control program at airports, to find out its effectiveness and take appropriate steps.

f) The committee shall appoint advisors and create sub-committee(s) as required.

g) Meet to discuss on bird problems at airport, review the measures taken and identify the appropriate solutions.

h) It can issue directive to government organization, non-government organizations and individuals if required on solving the bird hazards immediately. It will be the obligations of all concerned parties to obey such directives. The committee shall present its report to the Hon. Minster for Culture, Tourism and Civil Aviation in this regard from time to time and carry out the directives so received from the Minister.

4.2 International/ Domestic Airport Wildlife/ Bird Control Coordination and Implementation Committee:

The National Civil Aviation Wildlife/Bird Hazard Control Committee of Bangladesh, on its 1st Meeting decided to form a local level (Airport level) Wildlife/Bird Hazard Control Committee at each airport with Director/Airport manager as Chairperson.

4.2.1 Major Functions of the Airport committee:

(i) Considering the importance of bird control, each Airport Director/Manager is given the responsibility to take any action deemed necessary to implement the policy and minimize the bird strike rates in and in the vicinity of the airport. This includes the development and implementation of the airport wildlife control programme. The Director/ Airport Manager shall forward the bird/ wildlife strike report and minutes of the wildlife control meeting to FSR Division, CAAB HQ in regular basis.

(ii) Each airport is to implement programme tailored to conditions of the site, with assistance from headquarters or other outside agencies. The airport manager should appoint an wildlife coordinator, bird hazard control officer and a wildlife control committee which will develop and implement the specific programme.

(iii) The wildlife control committee is to include those officers involved in bird control or airport planning and operators that may affect bird control. This may include airport maintenance, air traffic services, flight services rescue & fire fighting services, security, etc. The committee must review strike report and daily activity records to determine effective control measures.

(iv) The airport manager/ wildlife coordinator should establish the responsibilities of the various offices involved .The bird hazard coordinator must review strike reports, daily activity records to determine the short or long term control programmes.
To collect Bird activities data and report to higher level committee i.e., Airports Wildlife/Bird Control and Reduction Committee (AWBCRC) Meet occasionally to discuss on problem of bird hazard management and find out solutions on such problems. Manage the bird hazard problem at airport Carryout the directives issued by the AWBCRC.

(v) To develop a wildlife (Birds & Animals) strike hazard study or assessment

procedure (depending on airport size and utilization, number of aircraft movements, etc.) for recording wildlife strikes, and analysis of collected statistical data involving wildlife activities & bird strikes, to reach the target value of the acceptable level of safety and forward to FSR division, CAAB HQ with recommendations.

(vi) The recording and analysis of bird/wildlife data can reveal trends that will assist airport authorities to recognize areas of concern. Bird/wildlife strike statistics can also be analyzed to determine those times of year or day when bird/wildlife control is needed the most.

Airport Operator will appoint an airport bird/wildlife control coordinator who is responsible and accountable for the airport's bird/wildlife hazard control policy and the personnel involved.

The coordinator should coordinate the activities of the wildlife control programme with air traffic control (ATC) & other stakeholders. He/she will review strike reports, monitor daily activity records and maintenance reports to determine the requirements for short- and long-term management programmes.

Effective analysis of bird strike data is particularly important. For example, separating strikes that occur on the airport (under 200 feet on approach and 500 feet on climb out using the ICAO definition) from those that occur further out in the approaches helps to define those strikes that are likely to be influenced by the airport bird management programme. Similarly, separating strikes with species that are over 100g in weight (i.e. those more likely to cause damage), and giving greater emphasis to strikes with flocks all help to identify trends in the real birdstrike risk at the airport. So, for example, an airport with an increasing rate of bird/wildlife strikes is not necessarily becoming a more risky place to fly. If the increase in strikes is due to an increase in incidents with small species, whilst the rate of strikes with large species and flocks is falling, then this is indicative of both better bird/wildlife control and better reporting of strikes. Again it is important to emphasise that the simple total number of strikes at an airport is not a good indicator of risk, and that examination of the data by species struck is essential.

4.3. Implementation of recommendations made for all Airports in Bangladesh by the committee.

a. Wildlife Strike Database
b. Garbage and Food Waste Control
c. Development of Bird Control Unit
d. Habitat Management on Airport
e. Falconry Program and automated Bird Dispersal Acoustic Systems.
f. Bird control committee for all airport.
g. One Year study of Bird activity report for all international/domestic airport.
h. Take necessary steps to control the development of facilities in the vicinity of
i. Implementation of recommendation made for all international & domestic airport, a study conducted on Wildlife Strike Risks at all Airport by SATO, Aerodrome safety Manager/ Aerodrome Safety Officer.
j) Airport Manager/SATO is responsible to record and report Wildlife/Bird strikes to aircraft or operators through R/T, Telephone or any available means.

4.4. **Implementation of directives, order and recommendation issued by National Bird Control committee, Airport Bird control coordination and Implementation unit and COSCAP-SA.**

4.4.1 Use of CAABs available bird shooter.
4.4. 2. Earthworm control- Spraying Binomyle.
4.4..3. Cleaning Runway and Taxiway when required.
4.4..4 Issue NOTAM (if required) about bird activities.
4.4.5. Arrangements of close Container.
4.4..6. Control of scattered open food stall.
4.4.7. One Airside Vehicle fitted with devices fully dedicated for wildlife and bird control.

5. HOW TO ORGANIZE AN AIRPORT BIRD STRIKE CONTROLPROGRAMME

5.1 An integrated approach is necessary for a successful bird control programme. The airport ground staff who operate the programme (at most airports) should ensure that all parties involved in airport use are informed of operations. The concern for bird control should be made aware to those in air traffic control (ATC), airport maintenance, planning, finance, marketing, as well as air operators.

5.2 Often ATC personnel will be responsible for requesting that ground staff clear certain areas of the airport of birds. ATC must be kept up to date on the control initiatives in place. All field personnel must be aware of the control programme and the techniques in use. These people should be in contact with ATC so that if there is a problem on the field, they can tell ATC about it and take appropriate action.

5.3 Those responsible for project planning and budgeting at the airport must realize the importance and seriousness of the bird strike hazard. Planned projects must be carefully reviewed to ensure that they are not attractive to birds during and after construction. The determination of crop types as well as the practice of grassland use by mowing or cutting is important for projects involving agricultural lease of airport lands. Crops and land uses attractive to birds should not be approved.

5.4 Finally, the air operators should be informed of airport policy and operations regarding birds and mammals. Aircraft operators may be able to offer their expertise and to advise field personnel in control matters. Pilots should use landing lights on take-off and approach as this may help to lower the risk of a bird strike. The aircraft operators should stress the importance of notifying ATC of all bird strikes or near-misses. The aircraft operators should also report all bird strikes through the ICAO bird strike reporting programme.

5.5 In summary, a very integrated approach should evolve and develop to control birds at airports. Field and ATC personnel must communicate to ensure proper control. Planning and financial personnel at sites should ensure that planned projects do not attract birds and compound the problem. The allocation of monies for bird control should be a regular operating cost and procedure. Finally, aircraft operators using the airport facilities should be aware of control procedures and should agree to assist.

6. **Guidance/ Mechanism how to control the development of facilities in the vicinity of the aerodrome that may attract wildlife/ birds & increase the bird strike risk at the aerodrome (environment management & modification).**

6.1 Birds occur on airport property for a variety of reasons; however, they are usually attracted by such essentials to life as food, water and shelter, often to be found on or in the vicinity of an airport.

6.2 Modifications to the airport environment can remove or limit the attractiveness of an airport to birds, thus eliminating a large part of the hazard. Environment management is integral to bird control as it offers effective, long-term measures for reducing the numbers of birds that will come to an airport. If direct action against birds is necessary it is usually because environment management has not yet been fully implemented or further measures are not cost effective.

6.3 Before under taking an actual programme of environment management, it is important to first carry out an ecological survey of the area so that the plan can deal with specific trouble areas. These areas will be directly related to the problem bird species at the site. Good reporting programmes can provide the basis for an ecological survey. From this, prioritization of activities or projects within the plan may then occur. There are many bird attractants that an environment management plan may control.

Food

6.4 It is difficult to remove all food sources for birds on airports. As grass is the common vegetation on an airport, grassland management has an important influence on food available to birds. All agricultural measures like mowing or hay making attract birds because of the disturbance of soil animals.

6.5 Birds may enter airport lands in order to feed on mice, moles, earthworms, insects and spiders as well as on berries, seeds or agricultural crops. These sources of food are very attractive to a variety of birds. Chemicals may be used on airport lands to reduce the foods available to birds.

6.6 Agriculture. Airport land that is not used for airport operations is often leased for agricultural production. This is done to generate revenue and minimize maintenance. However, because most agricultural crops, at some stage of their growth cycle, will attract birds, there is a need to understand which crops attract which bird species, when, and to what extent. Cultivation of airport lands will, no matter what the crop type, attract birds.

6.7 Chemical spraying should, as far as allowed by national laws, be carried out at suitable intervals keeping in mind the type of grassland, plant species, animals, hydrological situation, ground water and environmental conditions.

6.8 *Refuse dumps.* If a dump is in the vicinity of an airport, there may be a requirement to provide bird control at the dump site to reduce its attractiveness to birds. Whether or not a refuse dump attract birds that are a potential threat to aircraft depends on the location of the dump in relation to the airport, the type of refuse, and the types of birds expected in the vicinity. Dumps which take only refuse such as building waste, with nothing to attract birds, will not be a hazard.

6.9 It is desirable to bring about national and local legislation which will establish firm procedures prohibiting the establishment of new dumps close to airports and provide for the Closure of existing ones if this can be proved to be necessary. It is suggested that dump sites be no closer than 13 km from airport property. The proper siting of dumps can reduce any hazard they might create near airports. The opening of a dump even under strict control in the immediate vicinity of an airport can create a hazard and therefore its location should be carefully analysed by a group of specialists on bird problems.

6.10 Very few methods are available for preventing birds from feeding at refuse dumps. Scaring techniques are of only limited value, and it is impossible to bury refuse sufficiently rapidly to prevent birds gaining access to some of it. The only method likely to be acceptable is to cover the tipping area by wires or a bird-proof net.

Water

6.11 Surface water is attractive to birds, and on airport property it should appear as little as possible. Pits or depressions filled with water should be drained and clogged waterways should be cleared. By covering necessary water bodies, such as lagoons, with wires or netting, birds are inhibited from landing.

6.12 Drainage ditches clog up with vegetation or eroded soil and the flow of water is impeded. Insect and aquatic life flourish in clogged ditches. Clearing the ditches at regular intervals is important. They should be graded so that the water will run off as rapidly as possible and help keep them clear. Grass and other vegetation should be cut on the sloping banks. Bank slopes of drainage ditches should permit mowing with conventional equipment to reduce cover. Where practicable, the situation can be improved by replacing ditches with buried drain pipes.

6.13 In the vicinity of airports, artificial and natural lakes increase the bird strike hazard depending on the size and the shape of the lake, its trophological state and the surroundings. In every case an ornithologist/biologist should evaluate the ecological conditions of the whole vicinity as well as migration in the area, possibly by special radar ornithological studies. 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.

Shelter

6.14 Birds often seek shelter on airport property, usually in hangars and in nooks of other buildings. Birds also seek the open spaces on airport property for safety; this gives birds a clear view of their surrounding in all directions. Nesting will usually occur about the buildings on the airport, and it may also occur in shrubbery or forested or on the ground.

6.15 *Vegetation.* Trees provide food, protection, and nesting sites for birds and serve as look-out perches for predatory birds. Trees should be cut back to at least 150 m from the runway or taxiway centre line. The prevalent species of tree or type of forest determine what kinds of birds will be attracted to an area. Woodland areas, for instance, attract few birds of the open landscape. Planting trees, shrubs and hedgerows may, therefore, reduce the bird strike hazard. It is important, however, to choose plant species that do not provide seeds or berries that attract birds or that provide ample shelter, roosting and nesting sites. It may be necessary to check with an expert for the ones best suited to the task. In every case the ecology of

the area must be taken into account.

6.16 *Ground cover*. Some form of grass is commonly used as ground cover at most airports and there has been discussion regarding the height at which the grass should be cut. The height will vary depending upon which type of bird is a problem. Most birds dangerous to aircraft prefer short grass; there is only a small percentage of bird species which prefer long grass, e.g. partridges, pheasants and some small birds with low weights.

6.17 It is recommended that grass be maintained at a height of 20 cm or more. Gull-type birds often rest on short grass where they can see danger approaching; they also forage for food in short grass. By allowing grass to grow to a height of 20 cm or more, birds do not have good visibility and feeding is hindered. The only difference between the long and short grass technique is the way it is cut.

6.18 It is possible to use special seed mixtures when planting new grassland areas. Such mixtures can limit the grass length to medium heights and the frequency of mowings can be reduced.

6.19 The application of organic and inorganic fertilizers as well as compost materials should be reduced to the minimum so as to decelerate the growth of the grass and reduce the frequency of mowing required.

7. DISPERSAL METHODS

7.1. After environmental modifications of the site are complete, the dispersal of birds from the airport may still be necessary. There are various dispersal methods with varying levels of success. Depending upon the situation at a particular site, many methods may have to be used once one loses its effectiveness. In most cases it is effective to use a combination of more than one method and by varying the approach used and the combination of scare techniques, effectiveness can be increased. Continual harassment has been found to greatly reduce the bird population on airports.

7.2 Once a method has been chosen, it is necessary to note the response of the birds to dispersal. The success of the method is known immediately. Scare tactics can include pyrotechnic devices, gas cannons, light and sound, chemicals, trapping and falconry.

7.2.1 Auditory deterrents include:

a) Gas cannons;
b) Pyrotechnics;
c) Distress calls;
d) Alarm calls; and
e) Calls of predators.

7.2.2 The above auditory deterrents include both natural and man-made sounds used to disperse birds. Natural sounds that may be useful in dispersing birds include calls given by birds when they are alarmed or in distress, and calls of predators. Man-made sounds may include gunfire sounds produced by gas cannons or shell crackers, and abstract sounds produced electronically. It is important to develop well devised strategies before using scaring devices to avoid having panic stricken birds fly into aircraft during landing or take-off operations.

7.2.3 Although auditory deterrents are extensively used to disperse birds from airports, and can be

effective, habituation is a problem. Habituation is the reduction of responsiveness to loud noises that occurs when birds learn that there is no danger. Birds are less likely to habituate to natural sounds that have meaning to them, such as calls of a flockmate in distress or calls of a predator, however, habituation will occur even to these sounds. To reduce this problem, the change in location of the sound source must be frequent, and the killing of birds must occur to convince the others that the sound really is dangerous. Auditory deterrents are more effective against occasional visitors or transient birds than against resident birds.

7.3 VISUAL DETERRENTS

7.3.1 Visual deterrents include:
a) Scarecrows;
b) Flags and streamers;
c) Lights;
d) Predator models;
e) Hawk kites; and
f) Gull models.

7.3.2 The effectiveness of visual deterrents has been assessed primarily in terms of reduction of damage to crops; however, the techniques may also work in an airport environment. Habituation is a problem with visual deterrents as well as with the auditory deterrents.

7.3.3 Transient birds are more likely to be scared by visual deterrents since the chance to habituate to these tactics does not arise. The problem remains with resident birds that are attracted to the airport by its permanent features. Acombination of visual and auditory deterrents (usually exploders) sometimes has increased effectiveness.

7.4 BARRIERS

7.4.1 Airports provide the necessities of life — food, water, and shelter — for many wildlife species. If a species cannot gain access to these necessities, they will be less likely to be a problem on airport property. Use of physical barriers to prevent access can be a permanent solution to a wildlife problem.

7.4.2 Physical barriers that are useful against birds include several devices that prevent birds from roosting or nesting in or on buildings and ledges. Netting, for example, can prevent birds from nesting on buildings and may also prevent birds from feeding on crops on airport agricultural leases. Barrier systems work by deterring birds from landing rather than physically excluding them. This system consists of a grid of fine wires stretched above the surface of the feature, such as a ledge or a food or water source that is attracting birds. Buildings and other structures designed to preclude the existence of convenient nesting or roosting places for birds, or using plastic or metal surface materials that prevent nesting are other examples

7.5 LETHAL CHEMICALS

7.5.1 Chemicals to kill birds fall into three categories: (1) acute toxicants which kill shortly after ingestion of a single lethal dose, (2) anticoagulants and decalcifers which usually require ingestion of several doses over a period of days, and (3) fumigants which suffocate burrowing animals and can also kill birds in confined areas.

7.5.2 The most common methods to poison birds include:

a) Poison perches; and
b) Bait stations.

7.5.3 It is to be noted that poisoning of birds is forbidden in some States, with the exception of the calamitous occurrence of pest birds.

7.6 REPELLENT CHEMICALS

7.6.1 Chemicals may also be used to repel birds at some airports. The success of application is controversial and dubious. In some States these repellents are forbidden by law. Most often, chemicals are used to foul an area that a species of bird finds most attractive. By spraying the area with certain chemicals, birds will stay away; however, certain chemicals may only be successful on certain bird species. Once again, it is important to ensure that the use of any chemical repellents be safe to the environment and to non-target species, and not pollute run off or nearby watersheds. There are two types of repellent chemicals, i.e. tactile and behavioral.

7.6.2 *Tactile repellents*

8.6.2.1 There are several kinds of chemical repellents that may be useful in bird control on airports. The most common type for birds are tactile repellents which are sticky substances that deter birds from roosting on ledges and other flat surfaces. Although application of the repellent is fairly labour intensive, the treatment is effective for up to one year.

7.6.2.2 The most common commercial tactile repellents are:

a) *Tacky-Toes Bird Repellent Paste;*
b) *Bird Tangle foot;* and
c) Shoo Bird Repellent Paste.

7.6.3 *Behavioral repellents*

7.6.3.1 These repellents can cause visible symptoms of stress in birds. Unaffected members of the flock are frightened by the behavior of the affected individuals and disperse. The chemical must be placed in bait and eaten by the birds. *Avitrol is* the most common behavioral repellent.

7.7 THIRD-PARTY CHEMICALS

7.7.1 These chemicals eliminate bird attractants on airport property. It may include any pesticide to control insects or mammals that birds eat, or any growth-inhibiting herbicide for grass

or defoliant to control weeds, seeds, or berries that birds enjoy. Third-party chemicals should be used carefully and applied by trained personnel to ensure minimal environmental disruption. In some States these chemicals are forbidden

7.8 TRAPS

7.8.1 Traps can kill or capture birds alive for transport to a release area off the airport. Since live- trapping is time-consuming and costly, it is commonly used for protected species or for species with a high public profile. Live-trapping of birds that are not protected can readily be undertaken by airport personnel. In some States all bird species are protected by law and therefore trapping is allowed only on the basis of special regulations.

7.8.3 Traps that may be used for birds include:

a) Live traps; and

b) Raptor traps.

7.9 Through Electronic Devices

7.9.1 Airport Wailer 6 Unit –producing sonic and ultrasonic sound-coverage 6 acre

7.9.2 Quad Blaster 6 Ultra sonic bird repealer, coverage 100ft.360˚

7.9.3 Bird guard-sonic fitted on Airside Vehicle (dedicated for wildlife and bird control)

7.9.4 Bird light- one million power candle light flashes fitted on airside vehicle.

7.10 MISCELLANEOUS TECHNIQUES

7.10.1 There are other bird control techniques. *Benomyl* and/or *Kainite* can control the earthworm population on airport lands, especially along runways and taxiways. *Ornitrol* can reduce the fertility of birds and ultimately reduce the population. *Methiocarb is* a chemical applied on vegetation to deter birds from feeding, however high concentrations are necessary. In some States these chemicals are forbidden by law.

7.10.2 Falconry is in use in some States. This involves the use of predatory birds such as falcons, hawks, or owls to drive birds away. The technique is considered highly expensive due to the planning, strategy, etc. required. In some States falconry is rejected as a bird control technique, usually because falcons and other raptors are threatened by extinction and it is not possible to breed them efficiently in captivity.

7.10.3 Research in the area of dispersal of birds from an airport should continue, to ensure that the most up-to-date dispersal and detection techniques are used. As present techniques become inadequate, new technologies should be available as suitable replacements. Policy makers should realize the importance of on-going research in this field and should allot funds accordingly.

8. A suggested approach

The NCAWBHCCB advocates an approach that is very similar to the CAAB policy but differs in that in certain circumstances it offers developers an opportunity to propose a land use change in the vicinity of an airport but mitigate any risk.

8.1 It is proposed that each airport establish an "Airport Wildlife Strike Risk Protection Zone" (referred to herein as the "Zone"). Land uses within this zone should be then categorized into hazard categories (e.g. Very High, High, Moderate, Low, and Very Low). It is expected that the hazard levels would be based on wildlife risk factors such as the distance from the runways.

8.2 It is then proposed that a mandatory set of "Airport Wildlife Strike Risk Review Criteria" (referred to herein as the "Criteria") be established at a national level. The purpose of such Criteria is to provide a structured assessment in order to determine if the proposed development will contribute to the increased risk of a wildlife strike. To function properly, the Criteria would need to be considered by the relevant level of government (Local, State and/or Commonwealth) as a mandatory step before a decision on any proposed development within the Zone is determined.

8.3 Depending on the hazard category, the distance, and proposed mitigation, a development proposal within the Zone may (from least onerous to most):

1. Obtain approval from the relevant level of Government following assessment against the criteria.

   In exceptional circumstances, where the development is approved but the airport operator believes that a significant hazard to aviation still exists, the operator may then apply to the Secretary of the MOCAT requesting a review of the approval. Such a request would need to be submitted within five (5) working days of notification to minimize uncertainty to the proponent.

2. Be referred to the MOCAT for an 'authorities' assessment, with a presumption that the proposal be approved. The Department will make a decision based on its assessment of the risks posed by the proposal and will take into account the views of the airport operator and other stakeholders in making its decision. The Department and may also consult with CAAB, aircraft operators and independent experts to assist it in assessing the proposal. A recommendation for approval may be subject to the condition that the developer implements appropriate risk mitigation action in consultation with the airport operator.

3. Be referred to the AWBCC for an 'authorities' assessment, with a presumption that the proposal be refused. The Department will make a decision based on its assessment of the risks posed by the proposal and will take into account the views of the airport operator and other stakeholders in making its decision. The Department and may also consult with CAAB, aircraft operators and independent experts to assist it in assessing the proposal. A recommendation for approval may be subject to the condition that the developer implements appropriate risk mitigation action in consultation with the airport operator.

8.4. Be refused.

The proponent of a proposal that would fall under the category of "refused" may also apply to the Secretary of the AWBCC requesting a review of the refusal. The application for review must outline in detail:

- The mitigation measures proposed to reduce bird and wildlife hazards to aircraft;
- The reasons for the location of the proposal in the vicinity of the airport and why an alternative location is not suitable

In making a decision to approve a development that would fall under the category of "Refused", the Secretary must be satisfied that:

- The mitigation measures will effectively eliminate or adequately reduce the risk of bird and wildlife hazards to aircraft;
- The proposal is an essential development, which cannot be re-located;

All development proposals or land use changes within the agreed Zones would need to be provided to the Airport Operator prior to approval, even where that land use would normally fall within "approval" outlined at 1) above.

8.5 Where a risk assessment is required (i.e.: for 2. and 3. above), it should consider

1. Current and developing wildlife strike risks at the airport (in consultation with the airport operator). This will require a detailed understanding of airport operations, aircraft types, aircraft flight paths, etc. as well as understanding the relative risks of individual wildlife species.

2. Existing on and off airport hazards (roosts, breeding colonies, foraging, loafing and sheltering sites) that may influence the way in which wildlife populations will respond to the new land use. This may require an understanding of known or assumed flight tracks of birds and bats and how these change seasonally.

3. The proposed land use and the species likely to be attracted to it and how they will behave in relation to the airport and aircraft flight paths.

4. The mitigation proposed and its proven ability to acceptably mange the risk.

5. Monitoring requirements to ensure risks are not exacerbated over time.

At present, the AWBCC only has jurisdiction for planning decisions at States Airports as per the provisions of the CAR 1984. This Policy could be regulated via its incorporation in these Regulations, noting that the applicability of such Regulations should be confirmed as applying to all Bangladeshi airports.

This suggested approach considers that the AWBCC should have similar jurisdiction over appropriate land uses for all airports - regardless of their current status under the CAR 1984. This position recognizes that aviation safety is a national consideration and should

Therefore override other considerations to ensure that land use surrounding airports is appropriate and does not compromise aircraft safety.

It is expected that the allowance of the AWBCC to be able to 'override' development approval decisions (made by any tier of government) would be a fundamental shift from the existing regulatory framework. It is therefore surmised that relevant legislation would need to be passed to allow intervention by the AWBCC on such grounds.

8.6 Considerations

While the Bangladesh policy is robust, the national policy should consider additional land uses (see above). For instance the CAAB policy does not include wetlands, water bodies, sewer works, non-putrescible waste facilities or landscaping.

With respect to the "Airport Wildlife Strike Risk Protection Zone" (the "Zone"), a number of distances have been used:

• ICAO requirement states that up to 13 km must be considered.

• The Bangladesh policy uses intervals of 3, 6 and 15 km radius to define Zones.

• The Safeguarding Documents suggests a possible 15km radius for the Zone.

In Bangladesh, some high-risk species routinely transit up to 25km to and from forage and roost sites daily so there is a case for enlarging the prescribed 15km management zone to limit separation conflict with these wildlife. A blanket 25km radius at many airports may however be unnecessarily prescriptive and difficult to coordinate between local government authorities, especially in densely populated areas around major and regional airports. These zone limits are probably best defined on a site-by-site basis after assessing local high risk species and their movement patterns. Alternatively, a 15km radius to align with current Regulations with respect to building controls could be adopted.

The other aspect requiring consideration is retrospectively. What will be required of a land owner/manager where an existing hazard is identified. A distance-based "existing hazard management zone" could be phased in over time on a case-by-case basis.

9. INCOMPATIBLE LAND USE AROUND AIRPORTS

9.1 The concept of compatible land use planning is an outgrowth of the focus of attention on the environmental relationship between airports and their community neighbors. This planning concept is relatively simple and the results can be impressive but the implementation requires careful study and coordinated planning. Land use around airports can influence restrictions on aircraft flights as well as affect aircraft safety.

9.2 Some communities and airports have reached the point where the effect of land use planning guidelines may be minimal. However, there are still instances where their use will result in more compatible airport and community development. Implementation may take the form of aviation system plans, legislation for compatible land uses, easements or land zoning.

9.3 It has long been recognized that land use around the airport can influence bird strikes to aircraft. Birds can be attracted to areas near the airport and in turn go to the airport for food, water, resting or shelter. Some birds may also be struck outside airport property, over a land use that attracts them. In fact, 21 per cent of bird strikes reported to the ICAO IBIS system occurred "off airport". An "on airport" bird strike is that which occurs between 0 to 60 m (0 to 200 ft) (inclusive) on landing and 0 to 150 m (0 to 500 ft) (inclusive) on take-off.

9.4 Land uses which have caused specific problems at airports are:

a) Fish processing
b) Agriculture
c) Cattle feed lots
d) Garbage dumps and landfill sites
e) Factory roofs and parking lots
f) Theatres and food outlets
g) Wildlife refuges;
h) Artificial and natural lakes
i) Golf-, polo-courses, etc.
j) Animal farms; and
k) slaughter-houses.

9.5 In applying the guidelines on incompatible land use, one must consider the location of a proposed land use in relation to the airport. The location of attractive land use beyond the recommended distance could still create flyways over the airport or through flight paths at the airport. In some cases more than one possible use of an area may have to be considered to ensure that bird hazards will not be increased at or near the airport.

9.6 Regulations should be placed on the use of lands surrounding airports to reduce their attractiveness to birds. These regulations should be directed at all land uses mentioned above.

10. Moving Forward

Clearly, the development of a workable policy to protect the areas surrounding airports from wildlife hazards is a complex task, especially given the variety of local conditions that apply to individual airports.

"Airport Wildlife Strike Risk Protection Zones" will need to be tailored for individual Airports based on guiding principles, such as those outlined above. The NCAWHCCB considers that the Zones would need to be gazette, after verification of application received from Aerodrome operator.

The determination of the extent of these Zones should be made by the airport operator in consultation with airport operators, CAAB. Where an Airport has established a Bird and Wildlife Management Committee, the determination of the Zone could be assisted by that Committee.

The finalization of a workable national policy to protect the Zones surrounding airports from wildlife hazards would benefit from high-level input from across the aviation industry, ICAO, State's and Local Government.

The NCAWBHCCB is a national body that encompasses all relevant stakeholders and may be an appropriate forum for the development of the policy.

The NCAWBHCCB strongly endorses the CAAB safeguarding discussion document. The Committee acknowledges the significant hazards wildlife present to air safety and believes that safeguarding is an extremely important step in mitigating the risks. The Committee advocates a risk-based approach that categorizes land use types into hazard levels and then considering the distance from runway/s as to whether proposals should be accepted, referred to the airport operator, subject to risk assessment or refused.

The NCAWBHCCB looks forward to playing a role in the development of a national policy to protect airports from bird and wildlife hazards in the vicinity of airports.

11. EVALUATING THE WILDLIFE CONTROL PROGRAMME

11.1 The following questions are directed at airport management —specifically the airport manager— and are designed to assist in determining if there is an effective bird control programme in place at an airport.

11.2 Has a wildlife control programme been developed?

11.3 Has the wildlife control programme been implemented?

11.4 Has a wildlife control officer at the site been appointed and responsibilities assigned?

11.5 Has a training programme been developed to train those involved in the bird control programme?

11.6 Has a wildlife control co-ordinating committee been established with well defined responsibilities?

11.7 Has a reporting procedure been developed covering all aspects of the bird control programme?

11.8 Has a land use plan been established with regard to effective land use on and off the airport as it pertains to the bird control programme?

11.9 a list of all bird attractants at the site been completed?

11.10 List of all bird attractants surrounding the airport been completed?

11.11 Bird control methods been researched and implemented at the airport?

11.1 If the answer to anyone of these questions is “NO”, an effective bird control programme may not be in place at the airport. The airport bird control programme is only one aspect of a national programme.

END