



Cayman Islands Airports Authority

WILDLIFE HAZARD MANAGEMENT PROGRAM MANUAL

Version 3 - 8 Mar 2016



**Annex C to the Owen Roberts and Charles Kirkconnell
International Airport Aerodrome Manuals**

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Revision History

1st edition

November 9, 2010

The CIAA Wildlife Hazard Management Program Manual has been written to provide the users of Owen Roberts and Gerrard-Smith International Airport safe guidelines from which to mitigate hazardous wildlife in the aircraft operating areas. The manual was produced in compliance to the requirements of the OTAR part 139.B.19, and ICAO Annex 14 par 9.4.

2nd Edition

February 27, 2012

The Wildlife Hazard Management Plan has been revised to accommodate a new format leading up to section 1, as well as to include regulatory suggested improvements on content. Changes were made in consideration of the draft ICAO Document 9137- AN/901 Airport Services Manual Part 3- Wildlife Control and Reduction, and FAA wildlife hazard management criteria.

3rd Edition

March 8, 2016

The Wildlife Hazard Management Plan has been revised in order to recognize changes to job titles as a result of an organizational restructure of the CIAA. The Facilities and Maintenance manager role and responsibilities to **“make sure that all new construction, improvements and or modifications at aerodrome facilities are designed and constructed so they do not provide shelter for wildlife”** has been removed and placed with the Chief Safety Management Officer (CSMO), who as part of the CIAA project steering committee has the requisite skills to perform this function. In the first draft to the 3rd edition of this manual it was envisioned that a separate manual be created for each airport under the control of CIAA. After review and discussion with the regulating authority this action was deemed unnecessary and the manual has been once again combined for use at both airports. Each section of the manual has been updated to reflect the format and content suggested by the United Kingdom Overseas Territories Aviation Circular (OTAC) 139-6, titled “Wildlife Management”. Wildlife Strike reporting criteria taken from United Kingdom CAP 772, titled “Birdstrike Risk Management for Aerodromes” has been introduced and while the number of reports has increased the CIAA feels that the new reporting criteria affords a more realistic view of birdstrikes both reported and unreported, and adds clear definitions for documenting each instance of a Birdstrike. An explanation on the formulation of Safety Key Performance Indicators and Targets has been added and specific goals for the WHMP at each airport are now available. Finally, a new locally developed Risk Assessment Matrix has been added, to better assist Operational personnel in determining the risk associated with the presence of certain wildlife on the aerodrome.

Record of Amendments

Amendment Number	Amendment Date	Subject	Date Inserted into Manual
1	1 Apr 2017	<ul style="list-style-type: none">• Update CIAA website address in Introduction section• Update References for 2017• Update Birdstrike Form submittal process	1 April 2017

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PREFACE

Wildlife around aerodromes can present serious hazards to aircraft operations. The most obvious of these is the presence of birds, but other animals such as dogs, iguanas and other mammals can also cause disruption to normal operations. Birds have been a potential hazard to aircraft since the beginning of air travel. Birds were a minor risk in the early days as there were few aircraft in the sky travelling at relatively slow speeds. Damage to aircraft was somewhat minor and the cost of repair was small. Aircraft operators and airport authorities accepted bird strikes as a normal hazard of flying.

In time, the speed of aircraft increased and engine noise levels dropped with the development of newer generation jet engines. Aircraft simply became too quick and too quiet for birds to sense and avoid. Bird and wildlife strikes have become a serious threat to aircraft safety and this can be summed up in simple terms. As you increase the speed at which two objects meet you will also increase the resulting energy or impact force created at that point and thus cause more damage.

As the population of birds and wildlife on or near an aerodrome continues to increase for a number of reasons- including successful conservation legislation, and their natural habit areas continuing to shrink, the frequency of encounter between wildlife and airplane has and will continue to increase without proper mitigation.

Although modern aircraft engines are designed to withstand a certain degree of damage from ingestion of a foreign object and continue to operate, the aircraft is still forced to land prematurely and definitely with greater risk of an accident. To go one step further the costs of down-time for inspection and repair of aircraft following a bird strike, or suspected bird or wildlife damage, aborted flights, rescheduling of aircraft passengers and air cargo, transfer of passengers to alternative air carriers or means of transport, overnight accommodation at the expense of the aircraft operator and the deleterious effects on schedules of connecting flights can often be very significant and damaging to airline operating budgets and public image. As an industry, aviation partners and wildlife enthusiasts will have to come together to better understand this problem and find a common ground which can guarantee peaceful coexistence between wildlife and aerodromes.

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Manual Distribution Policy & Amendment Procedure

The latest version of this manual is available in electronic format on the CIAA's website - <http://www.caymanairports.com> and can be viewed by selecting the "at the airports" button at the top of the page, then click the tab for publications. Copies of this manual are distributed electronically to the list of recipients listed below. If hard copies are printed by recipients of the electronic distribution are not controlled; therefore, care must be taken to ensure paper copies are replaced with the latest amended version.

Chief Executive Officer Cayman Islands Airports Authority	Chief Safety Management Officer
Director General of Civil Aviation	Chief Security Officer
Chief Commercial Services	Manager CNS
Airport Manager CKIA	ORIA Rescue and Fire Fighting Service
Chief Airport Operations Officer	ORIA Air Traffic Control Tower
Manager Air Traffic Control	Airport Operations Manager
Chief Financial Officer	
CKIA Rescue and Fire Fighting Service	
CKIA Air Traffic Control Tower	

The CIAA Wildlife Hazard Management Manual is Annex C to the ORIA and CKIA Aerodrome Manuals and any proposed change to this manual should be reviewed to establish impact on the Aerodrome Manual or any of its other Annexes. The Chief Safety Management Officer is responsible for the development, and the Technical Librarian will be responsible for distribution of amendments to the CIAA Wildlife Hazard Management Program Manual.

When the manual is to be amended, one electronic copy of the amended manual will be emailed to the Civil Aviation Authority of the Cayman Islands (CAACI) along with details of the amendment. Once the amended Manual is approved by the CAACI a copy of the approved manual will be returned to the Chief Safety Management Officer. The Technical Records Librarian will be responsible to ensure any approved amendments are incorporated into the manual and load the approved amended version of the manual on internet site <http://www.caymanairports.com>. As this post is currently vacant the Chief Safety Management Officer will assume this responsibility until the post is filled.

At any time a particular requirement of this manual cannot be complied with, a report must be made to The Chief Safety Management Officer as well as the Airport Operations Command Centre.

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Glossary of Terms

Aerodrome A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Airport An aerodrome to which an aviation document/ certificate is in force.

Airside That area of an airport used for aircraft operations, inclusive of runway, taxiways, aprons and support areas.

Apron A defined area on a land aerodrome intended to accommodate aircraft for purposes of loading and unloading of passengers, mail or cargo, fuelling, parking or maintenance.

Bird strike The collision of an aircraft with an animal, including a bird.

A “**confirmed bird or animal strike**” is deemed to have occurred whenever:

- There is a collision between a bird/wildlife and an aircraft for which evidence in the form of a carcass, or other remains are found on the ground; or damage and/or other evidence is found on the aircraft.
- Bird/wildlife remains or complete carcass are found on an Aerodrome where there is no other obvious cause of death.

A “**unconfirmed bird or animal strike**” is deemed to have occurred whenever any reported collision between a bird/wildlife and an aircraft for which no physical evidence is found (i.e. no damage to the aircraft is evident upon inspection, and no bird remains, carcass or blood smears are evident on the airframe).

A “**significant event**” is an incident where the presence of birds/wildlife in the air or on the ground, resulted in an effect on a flight but where no physical evidence of an actual birdstrike exists. This includes near-miss occurrences, rejected take-off and go-arounds

An “**on aerodrome birdstrike**” Is any birdstrike occurrence reported by the commander of an aircraft, where the aircraft is believed to be at a height of up to 1000ft during climb out from, and/or below 200ft during approach to the aerodrome.

A “**aerodrome vicinity birdstrike**” (within 13km of an aerodrome) any birdstrike occurrence reported by the commander of an aircraft, where the aircraft is believed to be between 1000ft and 1500ft in the climb and between 1000ft and 200ft on approach.

An “**enroute birdstrike**” is any birdstrike occurrence where an aircraft is believed to be beyond 13km from the aerodrome radius in the climb or not below 3000ft on approach

Movement Area	That part of an aerodrome to be used for the surface movement of aircraft and includes the manoeuvring area and aprons.
Shall	Used to indicate any instruction, directive or procedure which is mandated (compulsory).
Should	Used to indicate a process or procedure which is recommended (optional).
Will -	Used to indicate any instruction, directive or procedure which is mandated (compulsory).

SECTION 1 – Introduction

The CIAA Wildlife Hazard Management Program Manual is a component of the Owen Roberts and Charles Kirkconnell International Airports Aerodrome Manuals and as such any changes or amendments must be approved by the Civil Aviation Authority of the Cayman Islands (CAACI). A copy of this manual is readily available on our website in the publications section. This website can be accessed by typing www.caymanairports.com into your web browser.

It is the policy of the Cayman Islands Airports Authority (CIAA) to promote airside safety at the airports under its management through the use of a Safety Management System. The Safety Management System Manual which guides our actions is part of the Aerodrome Manual and all personnel that are operating on the aerodrome shall make themselves familiar with its contents and their defined obligations.

The objective of this manual and the Wildlife Hazard Management Program is to minimize the risk to aviation safety, airport structures or equipment, or human health posed by populations of hazardous wildlife on and around the Owen Roberts and Charles Kirkconnell International Airports in the Cayman Islands. At all times the safety of airport personnel and the users who entrust us with their travel will remain paramount.

The goals of the wildlife hazard management program are to:

1. Identify wildlife hazards on or around the aerodromes;
2. Ensure that remedial actions necessary to mitigate the risks/hazards are implemented;
3. Provide for continuous monitoring and regular assessment of the safety level achieved by taking such actions.

The CIAA realizes that not all wildlife on an aerodrome will present a hazard. In fact the aerodrome has a living breathing eco-system and it is the intent of the CIAA to protect this eco-system by applying responsible corporate citizenship and fostering relationships with entities on and around the aerodrome that can provide various information and input as to how best to understand the yearly habits and needs of the wildlife resident on the airport. Through this collaboration of efforts we can work towards making ecologically sound decisions to make the critical areas for aircraft and airport operation less attractive to these species thereby reducing the hazard and keeping the risk of any incident to an acceptable level of safety.

Albert Anderson
Chief Executive Officer
Cayman Islands Airports Authority

SECTION 2- Guidance and Documentation

2.1 Guidance Material

2.1.2 The following is a list of guidance material used in formulating the CIAA WHMP:

OTAR Part 139, Certification of Aerodromes

Issue 7, 31 March 2015

OTAC 139-6, Wildlife Management

Issue 3, 24 Nov 2015

CAA UK CAP 772, Wildlife Hazard Management at Aerodromes

www.caa.co.uk, 18 December 2014

ICAO DOC 9137 - Airport Services Manual Part 3

Wildlife Control and Reduction, Fourth Edition – 2012

FAA Wildlife Hazard Mitigation Program

http://www.faa.gov/airports/airport_safety/wildlife

Wildlife Hazard Management Programmatic Evaluation Of

Owen Roberts International Airport, 11 – 15 July 2011

Conducted by Edward C. Cleary, Retired FAA Wildlife Biologist

SECTION 3- The Wildlife Hazard Management Plan

3.1 Roles and Responsibilities of Key Personnel

The following Key personnel will play a role in the execution of wildlife management:

3.1.1 Chief Executive Officer (CEO)

The CEO is responsible to take any action deemed necessary to define and implement the wildlife hazard management program and minimize wildlife hazards at the aerodromes. The CEO must provide Executive leadership to enforce the importance of the program.

3.1.2 Chief Safety Management Officer (CSMO)

Roles and Responsibilities:

- Act as **Wildlife Hazard Management Program Manager** for the Aerodromes;
- Management and **annual review** of the CIAA Wildlife Hazard Management Plan on behalf of the CEO;
- Conduct a wildlife hazard assessment **every four years** or sooner when required by triggering event or special circumstances;
- Ensure methods in place to monitor wildlife levels on a daily basis;
- **Collect, analyse and submit required reports of any instance of bird or wildlife strikes utilizing the form in Appendix F and forwarding such report to the CAACI.** Once this has been accomplished the information can be inputted into the CAA UK Online Birdstrike Reporting site. The correct website address for this is- <http://www.caa.co.uk/birdstrikereporting>;
- Ensure that staff are made aware of training opportunities in wildlife hazard management techniques;
- Make sure that all new construction, improvements and or modifications at aerodrome facilities are designed and constructed so they do not provide shelter for wildlife;
- Liaise with all pertinent government agencies to facilitate wildlife control off site that could have potential effect on aerodrome operations;
- Organize participation and facilitate meetings of the wildlife hazards working group as needed and maintain the associated records and action items;
- Maintain appropriate qualifications as a wildlife manager and ensure continuous membership in birdstrike committees as appropriate.

3.1.3 Chief Airport Operations Officer

Roles and Responsibilities:

- Ensure procedures to monitor wildlife levels on a daily basis are carried out as written in this plan;
- Ensure all newly assigned operational personnel receive training on runway inspection procedures, wildlife observations, and wildlife scaring techniques;
- Monitor daily aerodrome inspection forms (**see appendix B**) and ensure appropriate actions are taken in the event of any possible wildlife hazards. Report any abnormal wildlife observances immediately to the Airport Operations Command Centre (AOCC).

3.1.4 CKIA Airport Manager

Roles and Responsibilities:

- Ensure procedures at CKIA to monitor wildlife levels on a daily basis are carried out as written in this plan;
- Ensure all CKIA newly assigned operational personnel receive training on runway inspection procedures, wildlife observations, and wildlife scaring techniques;
- Monitor daily aerodrome inspection forms (**see appendix B**) and ensure appropriate actions are taken in the event of any possible wildlife hazards. Report any abnormal wildlife observances immediately to the Airport Operations Command Centre (AOCC).

3.1.5 CKIA Airport Operations Officer

Roles and Responsibilities:

- Ensure all CKIA culverts and water run-off areas remain clear of vegetation;
- Ensure plants are removed around any natural bodies of water on CKIA aerodrome;
- Ensure any new vegetation proposed for aerodrome is of such species that it will not be an attractant to hazardous wildlife;
- Ensure grass is cut utilizing guidelines and policies set forth by this manual;
- Ensure any trees or foliage inside the airport perimeter fence or within 10 feet outside of the fence are cut down to the ground or removed where feasible;

3.1.6 Facilities and Maintenance Manager

Roles and Responsibilities:

- Ensure all ORIA culverts and water run-off areas remain clear of vegetation;
- Ensure plants are removed around any natural bodies of water on ORIA aerodrome;
- Ensure any new vegetation proposed for the ORIA aerodrome is of such species that it will not be an attractant to hazardous wildlife;
- Ensure grass is cut utilizing guidelines and policies set forth for ORIA in this manual;
- Ensure any trees or foliage inside the ORIA airport perimeter fence or within 10 feet outside of the fence are cut down to the ground or removed where feasible;
- Ensure all maintenance personnel report any abnormal wildlife observations immediately to the Airport Operations Command Centre.”

3.1.5 Manager Air Traffic Control (ORIA and CKIA)

Roles and Responsibilities:

- Ensure constant monitoring of wildlife levels in aircraft manoeuvring area and its associated facilities by Duty Air Traffic Controllers and ensure they report any wildlife present to the AOCC immediately;
- Ensure methods in place for immediate and continuous update of wildlife hazard information to all pilots, making sure there is sufficient time from notification to ensure safe operation of aircraft;
- Attend meetings of the Central Planning Authority and coordinate CIAA input on all construction projects which could have an impact on wildlife levels on aerodrome, paying particular attention to any projects in the obstacle limitation surfaces or within **13 km** of the Aerodrome Reference Point (ARP);
- Ensure all newly assigned ATC personnel receive training on runway inspection procedures, wildlife observations and wildlife scaring techniques;

3.1.6 Chief Security Officer

Roles and Responsibilities:

- Ensure breaches to the perimeter fence are identified immediately to the AOCC and make every attempt to expedite repair or increase security patrols in the area until repair can be effected;
- Ensure any animal traps set out are monitored during security patrols and notify the AOCC of any animals captured;
- Ensure airports remain in compliance with all regulations and requirements to secure appropriate permissions from Governor's Office to perform lethal control of wildlife for safety of flight purposes;
- Establish and maintain notification process to inform local law enforcement authorities of any instances of weapons discharge or use of explosive devices on aerodrome;
- Report any and all observances of hazardous wildlife during routine security patrols of the perimeter fence to the AOCC;
- Assist where possible with the removal of any wildlife reported to be on any runway or taxiway on the aerodromes during airport operating hours.

3.1.7 Chief Financial Officer (CFO)

Roles and Responsibilities:

- Manage budgetary responsibilities for mitigation of wildlife;
- Ensure wildlife program manager is notified of any new contracts for construction or repair that could have an impact on wildlife at the aerodrome.

3.1.8 Wildlife Control Coordinator

Whilst the Wildlife Program Manager has overall responsibility for monitoring wildlife control at both aerodromes, the wildlife control coordinator at each site will assist with day-to-day management and execution of the WHMP.

Roles and Responsibilities:

- Assist Wildlife Program Manager with incorporating current scaring and deterrence techniques for wildlife which present a hazard to aircraft operations;
- Assist Wildlife Program Manager with developing trapping and removal procedures for hazardous wildlife on aerodrome;
- Assist Wildlife Program Manager with constant provision of lethal control services and assist cullers with compensation using form in **appendix D;**
- Establish and maintain training guidelines and course information for qualification of all parties authorized to provide lethal control;
- Ensure proper documentation of all wildlife control activities and provide said documentation to wildlife program manager for interpretation and filing.
- facilitate the active surveillance, bird dispersal, culling and other field tasks;
- safe keeping and correct maintenance of bird control equipment and consumables.

3.1.9 Wildlife Control Officer

A Wildlife Control Officer performs the front line role and may be a private contractor or any suitable trained member of airport operations staff.

Roles and Responsibilities:

- Implement active Wildlife disbursement measures in accordance with the WHMP to counter any detected wildlife;
- Provide the air traffic controllers, where applicable, with details of any potential wildlife strike risk;
- Record Wildlife levels and Wildlife control activity;

3.1.10 Wildlife Hazards Working Group

Roles and responsibilities:

- Assist Wildlife Coordinator in identifying hazardous wildlife attractants on or near the aerodrome;
- Assist Wildlife Coordinator in formulating mitigation strategies and policies to reduce the amount of hazardous wildlife present on the aerodrome;
- Assist Wildlife Coordinator in creating media releases to inform general public of wildlife mitigation strategies and effectiveness of same;
- Meet to review the airports Wildlife Hazards Management Plan at least annually;
- Meet as soon as possible following a Wildlife Hazard triggering event to review Wildlife Hazard Management Plan and recommend any immediate modifications or improvements to plan to Safety Committee;
- Prepare reports and make recommendations to Safety Committee for all wildlife matters.

This group will consist of representation from the following entities where available at each aerodrome and consist of at a minimum:

- CIAA CEO, Chief Safety Management Officer, Chief Airport Operations Officer, CKIA Aerodrome Manager, Facilities and Maintenance Manager and Chief Security Officer;
- Department of Environmental Health;
- Department of Agriculture;
- Civil Aviation Authority;
- The Humane Society;
- Airline Pilots Association;
- A.O.C. President;
- The National Trust;
- RFFS;
- MRCU;
- Central Planning Authority



Figure 1. Wildlife Program Manager Working Relationships

The Wildlife Hazard Management Program Manager must work with and through all the entities shown above in the Wildlife Hazards Working Group meetings to ensure the best results are achieved for hazardous wildlife management on and off the aerodrome.

3.1.11 Wildlife Control Unit (WCU)

During Seasons and periods of increased wildlife activities (for example- following heavy rains) The Cayman Islands Airports Authority (CIAA) Wildlife Control Unit (WCU) is activated and may be comprised of representatives of CIAA Safety Office, Airport Operations, Air Traffic Control (ATC) and Airport Security. Representatives must be sufficiently trained and certified to conduct their duties. At its discretion, the WCU may invite the participation of advisors, observers and other persons whose contribution will enhance the effectiveness of the WCU.

Advanced procedures for wildlife mitigation during these times are:

1. During early morning hours with high bird activity WCU personnel positioned on the airside will gain runway access as close to take-off time as possible and make rounds up and down the runway to scare off any bird's present, then return immediately following take-off to perform an inspection of the runway for possible birdstrike evidence. The Locally developed Risk Chart on page 3-14 can be used to determine risk level and actions necessary.
2. In the instance of severe concentrations of small birds on the runway surface (i.e. - swallows) the runway will be fogged with special smoke to ward off these birds. Details of this procedure are still being worked out in cooperation with Cayman Islands DOE personnel to ensure safest use of the equipment and least harm to the environment.

3.2 Training/Competency Requirements

3.2.1 Wildlife Program Manager

The Wildlife Hazard Management Program Manager was school trained at Minneapolis-Saint Paul International Airport in courses held by the American Association of Airport Executives in Airport Wildlife Management Techniques and then further trained as an Airport Hazardous Wildlife Manager. All courses comply with ICAO as well as FAA requirements for Hazardous Wildlife Management and are taught under the supervision of a qualified USDA/APHIS Wildlife Biologist. Subsequent to this initial training the Program Manager continues to maintain recurrent training every year and not less than every two years as recommended

3.2.2 Wildlife Control Personnel

Currently all Wildlife Control personnel have been school trained at Minneapolis-Saint Paul International Airport in courses held by the American Association of Airport Executives as either Airport Wildlife Hazard Managers or Airport Wildlife Management Techniques, or both. No uncertified personnel are authorized to conduct wildlife management techniques unless under the direct supervision and knowledge of a school trained wildlife management specialist.

3.2.3 Initial Training and recurrent Training requirements for CIAA Wildlife Control Officers

All operational personnel who will be directly involved in unsupervised hazardous wildlife management will attend an approved ICAO/FAA compliant training course at an authorized training centre and complete a locally managed training program including classroom instruction, On the Job Training (OJT) requirements and maintain annual recurrent training in order to qualify as a Wildlife Control Officer. The CIAA Safety Office is currently creating a local training program to qualify wildlife management personnel. The guidelines driving the requirements for this training will certainly come from the CAA UK.

Currently the CAA UK is working in partnership in association with a number of industry stakeholders in order to explore developing a standardized training syllabus for airport operations personnel covering a wide range of airside operations subjects. As part of this work, it is envisaged that a syllabus concerning wildlife hazard management could be developed, in order to provide aerodrome operators and those employed in the provision of such services, to deliver a standardized, generic training and assessment program and associated competency framework. Until such time as a new standardized syllabus has been agreed, the following wildlife control initial training program elements are suggested and will be used over the next year to develop a training program for CIAA personnel:

Background to Wildlife Strike Hazards

Nature and definition of wildlife strikes, nature and extent of the aviation wildlife management problem; characteristics of the aerodrome, including coastal aerodromes, inland aerodromes, grass aerodromes or tarmac aerodromes.

Roles and Responsibilities

How a wildlife control unit should be structured and who has responsibility for what roles and who the relevant people are, for example, air traffic control, air crews and external agencies.

Assessment of Risk

Understanding methods for evaluating wildlife strike risk and how this can be applied to the aerodrome environment.

Wildlife Identification

Correctly identifying aerodrome wildlife and understanding what to look out for when identifying species.

Aerodrome Ecology

Evaluating and understanding the features and factors on and around an aerodrome that attract hazardous species.

Habitat Management

An understanding of how to maintain an environment which is unattractive to birds and other wildlife.

Wildlife Ecology

An understanding of how wildlife could respond to different control methods: lively and immediate dispersal; temporary and unsettled dispersal; leaving aerodrome; removal to alternative area of aerodrome; following favored routes of departure etc.

Passive and Active Scaring Techniques

An understanding of how to disperse birds and other wildlife and the benefits and advantages of using different active and passive management techniques on and in the vicinity of an airfield and the applicability of techniques to different situations including health and safety aspects relating to all equipment and methods used.

Wildlife and the Law

An understanding of the law of the devolved UK, what can and cannot be done to resolve wildlife strike issues within the law including local bye-laws affecting the way operating bird scaring equipment might be utilized.

Wildlife Strike Reporting

An understanding of the requirements of reporting and what constitutes a wildlife strike. Collection, preservation and identification of strike remains.

Wildlife Recording

How to maintain a wildlife control log and what to record. Systems and procedures for reporting and analyzing data.

Safeguarding

Understanding the importance of managing the off-airfield environment and monitoring the impacts of wildlife hazards in the vicinity of an aerodrome.

Refresher Training

To ensure that wildlife/bird control personnel maintain competence, Annual refresher or another system of monitoring should be implemented by the aerodrome operator.

Certification A written certification should be provided to those who successfully pass the test(s).

3.3 Birdstrike definitions and mandatory reporting of Wildlife strikes

3.3.1 Wildlife Strike Reporting

In order to have an effective Wildlife Hazard Management Program it is necessary to collect, analyse and submit required reports of any instance of bird or wildlife strikes utilizing the form in **appendix F. All instances of wildlife strikes shall be immediately reported to the Airport Operations Command Centre at 345-244-5835 and the appropriate form will then be filled out and forwarded within 24 hours to the Airport Safety Office and CAACI.** This information can then be electronically filed by Safety Office personnel with the CAA UK at their online Wildlife/Birdstrike Reporting website at <http://www.caa.co.uk/birdstrikereporting>. Air operators filing reports of wildlife/birdstrikes shall ensure that a copy of the report is also provided to the aerodrome operator within 96 hours of the event.

Because an industry-wide definition of what constitutes a confirmed, unconfirmed (bird/wildlife strike) or near-miss occurrence does not exist, The Civil Aviation Authority of the United Kingdom has listed the following guidelines in **CAP 772** for confirmed and unconfirmed birdstrike occurrences (shown in Tables 1 and 2). The definitions shown in Table 1 are based on the best practice standards produced by the International Birdstrike Committee (IBSC) and those adopted by the International Federation of Airline Pilots Association (IFALPA). All personnel on Owen Roberts and Charles Kirkconnell International Airports shall use these guidelines when filing reports in order to maintain consistency in reporting. In the case of any report being submitted paragraph 2.1.1 should be consulted to determine of further actions are necessary under this WHMP.

Table 1- Birdstrike Definitions – Type of Strike

A. Confirmed Strike	B. Unconfirmed Strike	C. Significant Event
Any reported collision between a bird/wildlife and an aircraft for which evidence in the form of a carcass, or other remains are found on the ground; or damage and/or other evidence is found on the aircraft. Bird/wildlife remains or complete carcass found on an aerodrome where there is no other obvious cause of death should be treated as a confirmed strike and reported as such accordingly.	Any reported collision between a bird/wildlife and an aircraft for which no physical evidence is found (i.e. no damage to the aircraft is evident upon inspection, and no bird remains, carcass or blood smears are evident on the airframe).	Incidents where the presence of birds/wildlife in the air or on the ground, resulted in an effect on a flight but where no physical evidence of an actual birdstrike exists. This includes near-miss occurrences, rejected take-off and go-a-rounds

Table 2 Birdstrike Locations

D. On-Aerodrome Birdstrike	E. Aerodrome Vicinity Birdstrike	F. En-route Birdstrike
Any birdstrike occurrence reported by the commander of an aircraft, where the aircraft is believed to be at a height of up to 1000ft during climb out from, and/or below 200ft during approach to the aerodrome.	In the vicinity (within 13km) of an aerodrome, any birdstrike occurrence reported by the commander of an aircraft, where the aircraft is believed to be between 1000ft and 1500ft in the climb and between 1000ft and 200ft on approach.	Any birdstrike occurrence where an aircraft is believed to be beyond 13km from the aerodrome radius in the climb or not below 3000ft on approach

3.4 Hazard and Risk Assessment

3.4.1 Wildlife Hazard Assessment

In accordance with its airport certification manual each certificate holder must take immediate action to alleviate wildlife hazards whenever they are detected. After any **triggering event** or at any time deemed necessary by the CEO or his designate, the certificate holder should conduct a wildlife hazard assessment using the form in **Appendix C**. The wildlife hazard assessment must contain at least the following:

1. An analysis of the events or circumstances that prompted the assessment;
2. Confirmation of whether or not the airport was meeting obligations under current plan.
3. Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrences;
4. Identification and location of features on and near the airport that may have attracted the hazardous wildlife;
5. A description of all current wildlife hazards to air carrier operations;
6. Recommended actions for reducing identified wildlife hazards to air carrier operations;
7. Identification of any longer term actions that might be required for mitigation.

Triggering Events

The following is a list of triggering events that would call for a wildlife hazard assessment and a review of the procedures in the WHMP:

1. An aircraft experiences multiple wildlife strikes;

2. An aircraft experiences **substantial damage** from striking wildlife. As used in this paragraph, substantial damage means damage or structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component;
3. An aircraft experiences an engine ingestion of wildlife;
4. Wildlife of a size, or in numbers, capable of causing an event described in paragraphs (1), (2), or (3) of this section is observed to have access to any airport flight pattern or aircraft movement area.

Wildlife on the airport

Appendix A provides illustration and species information on the various forms of wildlife often resident on our aerodromes. The Cayman Islands is located in the Canada/North American Bird migration pattern and often receive visits from various different species during migration seasons.

Proper Identification of Species

In cases where the species is not recognizable remains can be identified via digital photographs of whole birds, major bird parts or feathers. Details of the aircraft type, phase of flight, location, time, date and aircraft altitude may all add valuable information that may help to confirm an accurate identification. Identifications can be achieved when even the smallest amounts of remains are left. The CIAA Safety Office should be contacted to take all samples. **The Cayman Islands is currently experiencing difficulty with sending DNA samples off-island due to Avian Flu restrictions. The St. Matthews University Staff have agreed to work closely with the US “Smithsonian Institute Feather Identification Lab” and UK Company “Birdstrike Management Ltd.” to prepare and provide a valid DNA sample for these companies, in order to affect a positive identification of wildlife species.**

Hazardous Wildlife Species

The predominant species of wildlife causing damage to aircraft is the **Cattle Egret**. Although several species of larger birds do sometimes frequent the aerodrome and are considered a threat to safe aircraft operations the Cattle Egret is indigenous to the Island and abundantly populated. This species accounts for the most damage to aircraft over the past decade on Owen Roberts International Airport.

Wildlife attractants ORIA:

It is the CIAA's intent to conduct a wildlife hazard assessment **every four years** or sooner when required by triggering event or special circumstances. The last assessment was completed in July of 2011. The yearlong assessment is only possible through the volunteer efforts of a local Veterinary College students (St. Matthews University) and there faculty has conceded that the curriculum is too busy to assist us currently. Based on both of these facts the wildlife study has been delayed until the end of the redevelopment project late 2018, when the eco-system at the airport will once again settle down. The following results are recorded from the Wildlife Study completed in July 2011.

1. **Standing water** is the number one attractant.

- a) The culvert system on either side of the airport runways has been blocked by sediment and overgrown vegetation. This has created a food source for birds. They can be seen congregating in the vicinity of these culverts hunting in the grass for bugs and small animals to feed on.

Long Term Mitigation- The CIAA has committed to develop an effective waste water management plan for the entire airside which will be implemented at the same time as they are addressing the filling of the Lakes in the approach area for Runway 08. An explanation of the project is listed below in the mitigation for the filling of the lakes.

Interim Mitigation- The CIAA will ensure the grass and bulrush in the culverts on either side of the runway remains in compliance with our Long Grass Policy. Wildlife patrols and airside personnel will keep a close watch on these areas and report any instance of wildlife presence for immediate mitigation.

- b) **Natural Lakes** in the approach area for Runway 08 and in the fire department pond make a great place for migrating waterfowl to stop and rest. This area is also ideal for large birds with long legs that like to fish in shallow water. There are also hickatee turtles using this area for habitat. During the initial wildlife study these areas were identified as one of “the major hazardous wildlife attractants” on the airport. Increased observation and constant mitigation has resulted in the CIAA being able to provide an acceptable level of safety for wildlife in this area.

Birdstrike reports and other data collected over the last several years prove that the risk of a Birdstrike in this area is very low. None the less, the CIAA has seriously pursued the following plans of action to address this serious concern.

- 1. The original mitigation plan to use wire grids to cover the lakes met with disapproval from wildlife activists who were concerned that birds could still land on the wires regardless, and in certain instances could be caught under the wires and not able to flee predators. Maintenance of the wires could also be problematic in our very corrosive tropical climate.*
- 2. A second mitigation plan to use floating balls to cover the lakes was conceived. While in the final phase of purchasing and implementing this mitigation plan it was learned that the floating balls will inevitably increase the algae content in the water and cause an odour and the death of other wildlife inhabiting the lakes. Also during high rain and flooding conditions more balls would be needed as the lakes expanded and during periods of low water levels as the lakes contracted balls would have to be removed. At this time based on current levels risk this plan was abandoned.*

3. *Taking all the current factors into account and our years of mitigating this wildlife attractant the following long and short term mitigation plans have been approved by the CIAA CEO and has met with approval of the Board of Directors:*

Long Term Mitigation- The Airport Master Plan makes provision for a runway starter strip directly crossing through this area. The lakes will be filled and compacted to a standard that will support a runway extension. The CIAA CEO has outlined the process for filling of these lakes and the resulting wastewater management to the Director General Civil Aviation (DGCA) in separate correspondence with deadlines for such action.

Interim Mitigation- The Bulrush and vegetation has been cleared from this area and as part of maintenance it will remain clear. The sides of the lakes have been scraped to present a sharp surface to deter waterfowl and turtles from easily wading into and out of the water. CIAA personnel will continue to monitor this area and mitigate all wildlife hazards while the Lakes are filled.

2. **Weak fence installation** allows animals to climb under.

- a) Lack of clearing vegetation 10ft. from fence line assists in animals climbing over and through fence line. Buildings constructed too close to fence add to problems during culling.



Long term Mitigation- The entire airport fence has been replaced with brand new fencing, and special attention was paid to ensure the bottom of the fence does not provide access for wildlife.

Interim Mitigation- Where practicable the CIAA will continue to clear vegetation 10 Ft. from the airport fence. Where problems exist, the fence will be buried into the ground to deter animals digging under it.

3. Incompatible Land Use around Airport

- a) **The Airport Park** is attracting and harbouring rodents.



Long term Mitigation- In the newly revised Airport Master Plan the Airport Park will be closed and relocated. This area is scheduled to be developed as overflow parking for General Aviation customers.

Interim Mitigation- After a meeting of the Wildlife Hazards Working Group it was agreed that the following interim mitigations would be done to address the hazards associated with the park:

- 1) The Trash Disposal container would be moved from its current location near the airport fence and runway to a location much further back and away from the runway.

- 2) The trees at the park will be pruned regularly to deter birds from nesting in them.
 - 3) Airport daily wildlife surveys will focus on and immediately report the presence of wildlife in this vicinity.
- b) **The George Town landfill** has been discovered to be a roosting site for the Cattle Egret and they are also feeding on the flies generated by the open dumping taking place daily.

Long term Mitigation- The Cayman Islands Government is currently in the process of finding a location on the other side of the Island that would better suit a facility of this sort.

Interim Mitigation- Landfill management has had the trees cut that presented the best roosting site for the cattle egret. As part of our agreement CIAA has provided literature to the Manager of the Landfill detailing procedures for covering the active dumping site with a screened enclosure to limit the attraction of fresh garbage to wildlife.

Wildlife Attractants CKIA

1. The airport's perimeter fence has been allowed to become overgrown with vegetation:

- a. There should be, at a minimum an 8 to 10 foot clear area on both sides of the airports perimeter fence.

Long term mitigation- Signed agreements where needed will be struck with landowners adjoining the airport fence to allow us to keep the vegetation on the fence cut properly.

Interim Mitigation- The airport will have the vegetation on or near the fence cut back to the suggested distance where practical.

2. Unmowed vegetation inside the perimeter fence:

- a. Dense vegetation provides cover for wildlife (prey species) that can attract hazardous species.

Long term mitigation- Work with Department of Environment to remove as much of the mangrove growing on the airport as possible.

Interim mitigation- The airport will remove the vegetation and mangrove closest to the runway as far as practicable.

3. Abandoned buildings and other junk material inside the perimeter fence:

- a. Abandoned vehicles and shipping container inside perimeter.

Long term mitigation- The airport will make a strong policy of not allowing any unnecessary or unused vehicles or containers to be stored inside perimeter fence.

Interim mitigation- A annual survey will be conducted to determine which vehicles are still in service and the abandoned vehicle (RFFS) and shipping container will be removed from inside the perimeter fence.

4. Dense stands of vegetation on north side of East Westerly Pond and vegetation around the West Westerly Pond:

- a. Vegetation on the airport provides food and cover for birds using the area.

Long term mitigation- Regular inspections of the airside to ensure no vegetation is allowed to exist that might provide food or shelter for birds.

Interim mitigation- All vegetation in these areas will be removed.

5. People feeding ducks near the airport:

- a. Cayman Brac residents living near the airport regularly feed a large number of waterfowl particularly the West Indies whistling ducks.

Long term mitigation- Continuous communication with landowners near the airport to make them aware of the hazards of feeding waterfowl or animals near the airport.

Interim mitigation- Directly speak to the offending landowners adjacent to runway 27 (private and commercial) and have them agree to stop feeding the birds. Use the wildlife hazards working group to keep the message alive and pressure local landowners and business owners to comply.

6. Incompatible Land Use around Airport

- a. There is an open landfill on Cayman Brac, this site is known to attract birds and other small creatures.

Long term mitigation- Through meetings of the wildlife hazards working group we will work with the management of the landfill and instruct them on how to make the site less attractive for wildlife.

Interim mitigation- A document will be forwarded explaining how to use a screened enclosure to cover the active dumping area at the landfill.

3.4.2 Risk Assessment of Wildlife Hazards

Before any risk assessment can be conducted with any degree of accuracy, the level of ambient wildlife risk, which is the level and type of wildlife activity that would occur in the absence of any monitoring or control measures, should be determined. A risk assessment should therefore be conducted initially to provide a quantifiable benchmark and repeated thereafter on a periodic basis. A typical risk assessment process may involve:

- a) A detailed hazard description, identifying wildlife species and associated habitats that influence the size and behavior of the species populations in the area;
- b) An assessment of the probability of a wildlife strike with a particular species, taking into consideration the current mitigation procedures in place and seasonal factors;
- c) Consideration of the species involved including size and numbers, an assessment of the likely severity of the outcome of a wildlife strike;
- d) An assessment of the frequency of serious multiple strikes;
- e) The determination of the acceptability of the level of risk by summing the probability and severity, based on a probability/severity matrix, such as illustrated in the figure below;
- f) The identification of further risk management options available; and;
- g) The development or modification of an action plan to eliminate, reduce or mitigate unacceptable risks.

3.4.3 Hazard and Risk Assessment Charts

On the following pages you will find locally produced charts that can be useful in determining the amount of Risk present on the aerodrome in ORIA. This chart has been produced in accordance with the fundamentals of SMS and after years of studying the habits of the species of birds that frequent this aerodrome.

Note- Use of this chart may not be accurate at any other aerodrome.

Qualitative Measures of Severity

Using "Mass"

<u>Level</u>	<u>Descriptor</u>	<u>Description</u>
1	Very Low	Swallow Sparrow
2	Low	Pigeon Dove Ani
3	Moderate	Cout Chicken
4	Hazardous	Cattle Egret Tiel Duck Whistling Duck
5	Very High	Great Egret Great Heron Night Hawk

Chart 2- Qualitative Measures of Likelihood

<u>Level</u>	<u>Descriptor</u>	<u>Description</u>
5	Almost Certain	4 or more birds flocking in active Birds near or on Runway Birds flying across Runway
4	Likely	Birds in active Birds jumping up after loud noise or take-offs Birds show signs of mating
3	Possible	3 or more birds actively eating in or adjacent to culverts, not in active
2	Unlikely	2 to 3 birds actively eating in culverts Not in active
1	Rare	1 Bird eating near airport fence

Chart 3- Risk Assessment Matrix

Likelihood		Severity				
		Insignificant	Minor	Moderate	Major	Catastrophic
		1	2	3	4	5
Almost certain	5	M	H	E	E	E
Likely	4	M	H	H	E	E
Possible	3	L	M	H	E	E
Unlikely	2	L	L	M	H	E
Rare	1	L	L	M	H	H

Chart 4- Legend

E	Extreme risk, immediate action required before continued Aircraft Operations
H	High risk, Full time monitoring of birds movements, Management attention needed
M	Moderate risk, monitor birds activities and scare away when flight schedule permits
L	Low risk; manage by routine procedures

3.5 Aerodrome Wildlife Control

The following controls will be used to make our airports less attractive to wildlife:

3.5.1 Habitat Management

In order of priority the following work needs to be done to make the aerodromes less attractive to the animals listed:

1. Limit Standing Water

- a) As far as practicable De-Muck culverts and clear drains to allow proper drainage of runway edges;
- b) Monitor the drainage capacity of culverts, lakes and bodies of water adjoining runways and take all measures to ensure as best as possible that drains are kept clear of debris;
- c) Continue to keep bulrush and grass out of the culverts, and mangroves cut back as far as practicable;
- d) Continue to keep lakes well-groomed and edges sharp using an excavator where possible;
- e) Use material generated from airport redevelopment and various other sources to fill in lakes and bodies of water adjacent to the runway where possible.

2. Fortify Airport fence

- a) Clear vegetation 10 ft. from fence wherever possible and install guards to prevent animals from climbing through or over fence.
- b) Increase strength of fence by fortifying bottom edge. Install additional fencing material sloping away from fence bottom. This extra material should also be buried to prevent animals from crawling under.

3. Long Grass Policy

Grass cutting will be allowed **Monday thru Thursday**. Grass is to be cut in the manoeuvring area in Zones- A, B, C, & D (see **Appendix E**) during the operational hours of **8:30am to 10:30 am only**. Unless specifically coordinated with Wildlife Control Officer and Air Traffic Control grass cutting in these areas will not resume until all aircraft operations have been completed for the day. In the event grass is cut after normal working hours grass cutting should be suspended at 5:30 am or two hours before first aircraft departure of the day, whichever comes first? The grass should be cut regularly to maintain a height between **(150-200) mm or (6-8) inches**.

Note- Other useful suggestions for Habitat Management can be found in Appendix "G".

3.5.2 Aerodrome Wildlife Control ORIA

The following personnel are assigned to the program:

- **Wildlife Hazard Management Program Manager-**
Chief Safety Management Officer- Andrew McLaughlin
- **Wildlife Control Coordinator-**
ASRCO Michelle Powell
- **Wildlife Control Officer-**
ADO Armando Ebanks

The following are the agreed procedures between CIAA sections to control and disperse remaining wildlife risks on airfield and the frequency of their implementation.

1. Surveillance

Physical inspections of the movement area and other areas critical to wildlife hazard management must be done sufficiently in advance of air carrier operations to allow time for wildlife mitigation to be effective. Coordination between the various groups and organizations on an airport is essential for good wildlife control. Airport Operations, grounds and maintenance departments, airport fire service, airport restaurants, airport planners and air carriers all have a role to play in identifying and correcting wildlife problems.

a) Airport Operations, ATC, Maintenance, and Airport Security

Four wildlife activity inspections will be carried out daily by Operations, and ATC. Maintenance and Security can assist with surveillance during their checks of the airside.

ATC will inspect in the morning between the hours of **5:00 am and 6:00 am**, and in the evening hours between **6:00 pm and 7:00 pm**.

Airport Operations will inspect in the morning between the hours of **7:00 am and 9:00 am**, and in the evening hours between **2:00 pm and 4:00 pm**.

All sections will notify **ATC** on **Motorola channel 2** and **AOCC @244-5835** immediately of any concerns noted during inspections. Inspection reports (**see Appendix B**) will be scanned, and forwarded to the AOCC. The AOCC will review and make appropriate notification of discrepancies to the appropriate sections for mitigation and electronically file the reports in the Safety Library folder immediately.

b) Pilots and Aircrew

If an aircrew observes or encounters any bird activity while in flight, which could constitute a hazard, the aircrew are to contact ATC and request that the observed bird activity be passed on to the AOCC. The following information is necessary:

- 1) Call sign;
- 2) Location;
- 3) Altitude;
- 4) Time of sighting;
- 5) Type of bird (if known);
- 6) Approximate number of birds;
- 7) Behaviour of birds (soaring, flying to or from a location, etc.)

c) Airport Tenants

Fixed-based operators, catering services, and airport concessionaires must ensure their actions do not create hazardous wildlife attractants. If at any time their actions create a hazardous wildlife situation they are to report this to **the AOCC @244-5835** immediately and take steps to remedy the situation.

2. Active Wildlife Control

Once a threat or unsafe condition has been identified it will be passed to **the AOCC @ 244-5835**. Once the request for intervention has been received the Airport Duty Officer in the AOCC will:

- a) Notify the Wildlife Control Coordinator @ **345-926-5202** or Wildlife Hazard Management Program Manager @ **345-916-5317** with all details (including where practical a real time hazard assessment) and details of any pending flights;
- b) The Wildlife Control Coordinator or WHMP Program Manager will revert to the AOCC with an estimate of the timelines and plans for mitigations;
- c) The Airport Duty Officer will then pass this information to ATC in order for them to pass the mitigation plan to any impacted aircrew. Once a decision is made by the aircrew to wait for mitigation or continue with their flight plan, ATC will contact the AOCC and appraise them of the situation;
- d) Once cleared by the AOCC to take action, the qualified Wildlife Control personnel will continue with mitigation plan. Some of the methods to be employed are listed below in order of execution. Based on gravity of situation or proximity to scheduled flight times it is possible to advance to most appropriate step as needed.
- e) **Dispersal Methods**
 - I. As needed conduct regular trapping and animal relocation activities to maintain wildlife level conducive to safe flight operations.

- II. Use scare tactics such as driving a truck along the runway and beeping the horn to scare the birds off, and then deploy air cannons to keep them away.
- III. Within two hour window of flight operations conduct culling activities to remove wildlife from manoeuvring area.
- IV. Based on species, past experience and type of activity or size of flock remove wildlife from surrounding areas.

Note- Appendix “H” contains additional useful information on hazardous wildlife dispersal methods

3.5.3 Aerodrome Wildlife Control CKIA

The following personnel are assigned to the program:

- **Wildlife Program Manager-**
Chief Safety Management Officer Andrew McLaughlin
- **Wildlife Control Coordinator-**
Airport Operations Officer
- **Wildlife Control Officer-**
Air Traffic Controller Joshua Burke

1. Surveillance

Physical inspections of the movement area and other areas critical to wildlife hazard management must be done sufficiently in advance of air carrier operations to allow time for wildlife mitigation to be effective. Coordination between the various groups and organizations on an airport is essential for good wildlife control. Airport Operations, grounds and maintenance departments, airport fire service, airport restaurants, airport planners and air carriers all have a role to play in identifying and correcting wildlife problems.

a) Airport Operations, ATC, Maintenance, and Airport Security

Four wildlife activity inspections will be carried out daily by ATC and Maintenance during their normal check of the airside surfaces. Security can assist during perimeter checks.

ATC will inspect in the morning prior to opening operations, and in the evening hours before sunset.

Maintenance or the AOO will inspect mid-morning and mid-afternoon.

All sections will notify **ATC** on **Motorola channel 4** or **AOCC @ 244-5835** immediately of any concerns noted during inspections. Inspection reports (**see Appendix B**) will be forwarded to the Airport Manager CKIA, scanned and sent to the AOCC. The AOCC will review and make appropriate notification of discrepancies to the appropriate sections for mitigation and electronically file the reports in the Safety Library folder immediately.

b) Pilots and Aircrew

If an aircrew observes or encounters any bird activity while in flight, which could constitute a hazard, the aircrew are to contact ATC and request that the observed bird activity be passed on to **the AOCC @ 244-5835**. The following information is necessary:

- 1) Call sign;
- 2) Location;
- 3) Altitude;
- 4) Time of sighting;
- 5) Type of bird (if known);
- 6) Approximate number of birds;
- 7) Behaviour of birds (soaring, flying to or from a location, etc.)

c) Airport Tenants

Fixed-based operators, catering services, and airport concessionaires must ensure their actions do not create hazardous wildlife attractants. If at any time their actions create a hazardous wildlife situation they are to report this to **the AOCC @244-5835** immediately and take steps to remedy the situation.

2. Active Wildlife Control

Once a wildlife threat or unsafe condition has been identified it will be passed in the following order:

- a) Notify the Wildlife Control Coordinator @ **345-929-2709** or CKIA Airport Manager @ **345-926-4708** with all details (including where practical a real time hazard assessment) and details of any pending flights;
- b) The Wildlife Control Coordinator or CKIA Airport Manager will revert to ATC with an estimate of the timelines and plans for mitigations;
- c) ATC will pass the mitigation plan to any impacted aircrew. Once a decision is made by the aircrew to wait for mitigation or continue with their flight plan, ATC will contact the Wildlife Control Coordinator or CKIA Airport Manager (whoever is currently dealing with this issue) and appraise them of the situation;
- d) Once cleared by ATC to take action, the qualified Wildlife Control personnel will continue with mitigation plan. Some of the methods to be employed are listed below in order of execution. Based on gravity of situation or proximity to scheduled flight times it is possible to advance to most appropriate step as needed.
- e) **Dispersal Methods**
 - I. As needed conduct regular trapping and animal relocation activities to maintain wildlife level conducive to safe flight operations.
 - II. Use scare tactics such as driving a truck along the runway and beeping the horn to scare the birds off, and then deploy air cannons to keep them away.
 - III. Within two hour window of flight operations conduct culling activities to remove wildlife from manoeuvring area.
 - IV. Based on species, past experience and type of activity or size of flock remove wildlife from surrounding areas.

Aircraft Flight Schedule Modification

Based on knowledge of the bird problem and ongoing mitigation methods it is recommended that all flight operations be limited to the operational hours of the airport as posted. **Aircraft taking off and landing before sunrise and after sunset should be discouraged.**

Note- A full description of other Hazardous Wildlife Dispersal methods is contained in Appendix G.

3.6 Safeguarding and Off Airfield Monitoring

The CIAA holds an annual meeting of the Wildlife Hazards Working Group at each aerodrome. An ad is run in the local newspaper for at least two weeks approaching the date of this meeting to invite any members of the public who are interested in learning about or making suggestions for Hazardous Wildlife Management at the Airport.

Members of the Cayman Islands National Trust, Central Planning Authority, Solid Waste Disposal Unit and local Humane Society and Animal Relief organizations are invited to attend this meeting in order to give them a better understanding of our policies and procedures in the Wildlife Hazard Management Program and how they can help assist in our goal to reduce wildlife threats to aviation. Although no State Legislation exists in the Cayman Islands for safeguarding the airport against incompatible land use around the airport, the airport intends to continue working with our partners on and off the airport to one day get this very necessary legislation in place.

3.7 The Wildlife Control Log

Anytime the Wildlife Control Coordinator or WHMP Program Manager have to respond to a request for mitigation, or at any time hazardous wildlife is encountered in the normal business of the day a log entry is made detailing **what date, time, number, species, location and what action was taken.** Anytime the services of a culler are used, in addition to the Wildlife Control Log the form in Appendix D must be filled out. At the end of each month this form and an appropriate invoice must be turned in to Finance section for payment.

3.8 Review and Feedback

Safety Key Performance Indicators are short term, tactical, easy to measure and be linked to the major components of a company's SMS. Agreed safety performance should be commensurate to the complexity of individual aviation organizations specific operational contexts; and availability of aviation organizations resources to address them.

Safety performance targets are long term, strategic measurable objectives and realistic for individual departments. Safety targets are expressed in numerical terms, should be measurable, acceptable to stakeholders, and be linked to the Key Safety Performance Indicator (short-term objective) of an SMS.

Safety Key Performance Indicators and Targets will be provided to the Regulating Authority at the beginning of each calendar year in a private separate correspondence, endorsed by the CIAA CEO, and following agreement with the State Civil Aviation Oversight Authority will be used to assess the performance of the WHMP and SMS.

Current goals of the CIAA WHMP

The annual rate of Birdstrikes at ORIA for the year 2014 was
1 in every **931 aircraft evolutions**.

The annual rate of Birdstrikes at CKIA for the year 2014 was
1 in every **426 aircraft evolutions**

CIAA is committed to reducing this rate by 5% each year moving forward.

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Appendix A

Wildlife Identification

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Wildlife Identification

The following is a brief description of some of the wildlife species present on Cayman Islands Airports.



Cattle Egret (*Bubulcus ibis*)

A small, stocky heron with a short neck and a stout bill, this species specializes in associating with grazing animals in open country. It is often seen walking on the ground in a herd of cattle, catching the insects that the animals disturb with their feet, picking flies off them, and flying up to use them as temporary perches. Apart from insects, it takes any other small animal that it finds. Cattle Egrets roost communally in trees or on the ground near water and nest in colonies in trees or bushes, in reed beds or other swamps. The Cattle Egret is white in color and 20 inches in length.



Barn Swallow (*Hirundo rustica*)

Barn swallows upperparts and breast band are metallic blue; forehead, throat, upper breast chestnut; under parts are white. Barn Swallows eat insects, taking them during flight. They appear to have a preference for flies and mosquitoes (*Diptera*). To feast on swarming insects, they may join other birds like Swifts. But unlike Swifts which simply trawl the air with their mouths open, Swallows actually chase after individual prey and perform aerial acrobatics to catch them. Swallows also hunt at lower levels than Swifts, particularly during wet weather. Barn Swallows breed in the north from America through Europe to China. They court with aerial chases, the pair often perching on a branch to preen each other. They may mate in flight. Barn Swallows build solid nests out of mud pellets brought by the beak full from puddles and river banks, combined with dry long grasses. They are often considered a pest because of their untidy and messy nests near human habitation.

Appendix A



Smooth - Billed Ani (*Crotophaga ani*)

With a short, squat body and heavy head, this dishevelled - looking bird does not resemble other cuckoos. It has a deep, blunt bill and a long, wedge - shaped tail that droops and wags as though loosely attached. Despite its ungainly appearance it walks and runs well, but its flight is poorly developed, consisting of a few rapid flaps interspersed with short glides. Feeding mainly on the ground, it takes grasshoppers and other insects, and follows cattle to catch the insects they disturb. The bird may also settle on the back of an animal and pick ticks of its skin. The species is highly sociable and feeds in small groups, communicating with a long, whining note. When resting, either on the ground or in bushes and small trees, the birds huddle together, sometimes preening each other. Breeding is loosely communal. Several pairs cooperate to build a nest, several females lay their eggs in it, and the whole group shares in incubation and in rearing the nestlings. The young often stay with the group and help to rear subsequent broods. The Smooth-Billed Ani is black in color and 14.5 inches in length.



Mourning Doves (*Zenaida macroura*)

Common in a wide variety of habitats, this bird is found in arid scrub, open woodland, farmland, gardens, and towns. It flies rapidly with whistling wing beats and has a characteristic upward flip of the tail after landing. Mourning Doves are seen in pairs or small, loose groups. When not breeding, they are seen in larger groups at feeding sites or roosts. The call is a mournful - sounding series of coos. Birds feed on the ground, chiefly taken small seeds, and also grain and green shoots. The male's display flight consists of a noisy, flapping ascent followed by a downward glide. On the ground, displaying males bow to the females with puffed up necks. Their length is 12.5 inches.

Appendix A



White winged dove (Zenaida asiatica)

At 12", a brownish gray dove with blackish wings that have a broad diagonal bar; rounded tail has whitish corners, noticeable in flight. Gregarious, feeding in large flocks, especially after breeding; roosts in nesting trees; desert populations rely largely on cactus fruit for water. This rare visitor from the Southwest is brownish-gray like a Mourning Dove but bulkier and shorter-tailed. The best field marks are the large, white upper wing patches readily visible on the folded wing and in flight. White-winged Doves live in dense woodlands and brush with thick canopies such as oak, citrus, ash, and elm, or in urban areas (including large cities) where they gravitate toward large shade trees. Cleared lands for agriculture or other developments are less attractive.



Pigeons-(Rock Doves) (Columba livia)

The rock dove commonly is referred to as a pigeon. Patterns of blue to gray colour vary from bird to bird. The wild rock dove generally has iridescent feathers on its head and neck. They also characteristically have two black bars across each wing, a white rump and a black band at the end of the bill. Rock doves are all-around adaptable birds. They are able to exploit the many advantages that urban areas have to offer. They feed not only on grain, green leaves and invertebrates, but also on the goodies that people provide such as bread crumbs, popcorn, peanuts and cake. Individuals may sample several feeding sites, and they might even settle temporarily in an area should the availability of food be especially good. Rock doves prefer cities, towns and rural areas and generally wherever humans are close by.

Appendix A



White crowned pigeons (Columba leucocephala)

The White-crowned Pigeon (*Patagioenas leucocephala*, formerly *Columba leucocephala*) is a species of bird in the family Columbidae (doves and pigeons). It inhabits the northern and central Caribbean islands and some places on the North and Central American mainland. It is 29 centimetres (11 in), has a wingspan of 48 centimetres (19 in), and weighs 0.15 kilograms (0.33 lb). The adult is dark grey, with green and white bars on the nape, a brilliant white crown to the head, a white iris, and a pale-tipped red bill. Juveniles are a less dark shade of grey, lack the nape pattern and white iris, and show only a few pale feathers on the crown. The White-crowned Pigeon needs two distinct habitats, one for nesting and one for feeding. They typically breed in coastal red mangroves (*Rhizophora mangle*), which continue to be clear-cut for crops such as sugarcane. The bird is very skittish, and is known to simply abandon its nest when it is encroached upon.



Barn owl (Tyto alba)

The Barn owl (*Tyto alba*) is a medium-sized owl and is of 4 species with dark eyes. This owl has light gray on its upper body with reddish brown and puffs of white feathers. It has gray spotting on its wings and head. The underside is very white. It has a very distinctly heart-shaped facial disc that is sharply outlined with reddish brown. Its beak is off-white and the feet are yellowish white with brown. Females often have more spots than males. This owl is nocturnal and preys upon small mammals like voles, gophers, shrews, mice and rats and also bats, frogs and insects. They use a combination of sight and hearing to detect their prey. Their hearing is better than their sight, and has the sharpest hearing out of any animal tested. They often hunt in open grasslands.

Appendix A



Greater Antillean Grackles (Quiscalus niger)

The Greater Antillean Grackle (*Quiscalus niger*) is a grackle found throughout the Greater Antilles and the Cayman Islands as well as smaller, nearby islands. Like all *Quiscalus* grackles, it is a rather large, gregarious bird. The 27 cm long male is glossy black with a large tail; the 24 cm long female has a smaller tail and is similar in color but less glossy than the male. It lives largely in heavily settled areas.



Glossy Ibis (Plegadis falcinellus)

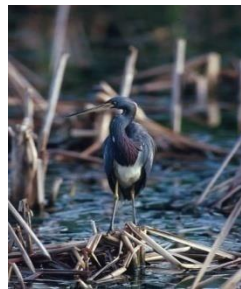
The glossy ibis is about 20 inches tall with a wingspan of about three feet. It has a long, dark gray bill that is curved down. It has dark purple to black feathers on its head, neck, back and belly. Its legs are long and black and its wings and tail are a shiny green. In breeding season the glossy ibis has rusty-red feathers and a pale blue line around its face. The glossy ibis can be found in a variety of wetlands including marshes, estuaries, coastal bays, flooded fields and swamps. The glossy ibis probes in the mud and silt with its bill looking for prey like the fiddler crab, crawfish, insects and small snakes.

Appendix A



Little blue heron (*Egretta caerulea*)

The little blue heron is a small heron. It is about two feet tall with a wingspan of about 40 inches. It has slate-blue feathers with a maroon neck and head. Its bill is gray with a black tip and it has gray to blue legs and feet. Its long bill is gray with a black tip and it curves slightly downward. It has yellow eyes and black legs. Males and females look alike. The little blue heron makes its home in freshwater swamps, lagoons, coastal thickets and islands. The little blue heron eats fish, crustaceans, amphibians, insects and reptiles. It stands in shallow water and waits for its prey to go by, and then it grabs its prey with its pointed bill.



Tri-colored heron (*Egretta tricolor*)

The tricolored heron is about 22 inches in length and has a wingspan of about 3 feet. It has slate blue feathers on most of its body, except for a white chest and belly and a rust-colour neck. It has long yellow legs; a white stripe that runs up its neck; and a long, pointed yellow bill that turns blue during breeding season. The tricolored heron can be found in marshes, swamps, bayous, mudflats, lagoons and coastal ponds. The tricolored heron wades in the water in search of prey. Most of its diet is made up of fish, but it also will eat amphibians, insects and crustaceans. It sometimes wades in deep water when looking for food and all that can be seen of it above the water is its body.

Appendix A



Little green heron (*Butorides virescens*)

The green heron is sometimes called the green-backed heron. It is a small heron that is about the size of a large crow. It is a foot and a half to two feet in length. The green heron has a dark head with a small black crest. Its back and wings are dark gray-green to dark gray-blue. Its neck is rust coloured. It has a dark bill and its legs are orange or yellow. The green heron lives in freshwater or brackish water marshes with clumps of trees. The green heron feeds at the edge of the water. It eats mostly small fish, but it also eats crustaceans, molluscs, insects, reptiles, amphibians, spiders and leeches. The female green heron lays three to six eggs in a nest made of sticks. The nest is built in a tree, in a dense thicket, or occasionally, in the reeds or cattails in a marsh or in an orchard.



Yellow crowned night heron (*Nyctanassa violacea*)

Has similar proportions to Black-crowned but plumage is mainly blue-gray with striking black and white markings on head. In flight, note the entirely dark under wings (white in Black-crowned). Most active after dark and typically roosts in trees during daytime, adopting hunchback appearance. Sexes are similar. Favours dense swamps, coastal marshes, mangroves, and beaches; present year-round in coastal districts, but range extends inland and north in summer.

Appendix A



Great Blue Heron (*Ardea herodias*)

It stands three to four feet tall and has a wingspan of almost six feet. It has blue-gray feathers on most of its body and a plume of feathers on its chest and back. It has a long, pointed yellow bill and long legs. The great blue heron can be found in marshes, rivers, lakes, salt water shores and ponds. The great blue heron fished for food during the day and at night. It stands in the water and waits for prey like frogs and fish to pass by and then it grabs them with its long bill. It also eats salamanders, lizards, snakes, shrimps, crabs, crayfish, dragonflies, grasshoppers, aquatic insects and occasionally birds and small mammals like mice. The great blue heron migrates in the fall, although some stay in the northern part of their range. The great blue heron usually tucks its head into an S-shape when it is resting and flying.



Snowy Egrets (*Egretta thula*)

The snowy egret is about two feet in length and has a wingspan of about three feet. It has white feathers, a yellow patch of skin around its eyes, a black bill and black legs with bright yellow feet. The snowy egret can be found in marshes, swamps, shorelines, mudflats and ponds. The snowy egret runs after its food. It eats shrimp, minnows and other small fish, crustaceans and frogs. It often feeds in groups. The snowy egret breeds on the Atlantic Coast, the Pacific Coast and the Gulf Coast. It is also found in some inland areas. It winters from California south to South America on the west coast and from Virginia south to the West Indies on the east coast.

Appendix A



Great Egret (*Ardea alba Casmerodius albus*)

The largest of the American herons, this bird occurs in both freshwater and saltwater habitats, hunting in marshes and still or slow - flowing water for fish, frogs and other creatures. Sometimes it wades up to its belly in search of fish. It also hunts on dry land, stalking prey in open habitats or standing still to watch for it. Mice, gophers, and other animals are taken. Their length is 50 inches.



Great Frigatebird (*Fregata minor*)

This bird is often seen soaring and gliding on the winds over coast and sea, with long wings extended. It feeds in the air, either swooping to snatch fish from the sea or attacking other seabirds and forcing them to drop or disgorge their food for its own consumption. During breeding, the male Great Frigatebird inflates their red throat sacs in display. They are colored black and white, and their length is 39 inches.

Appendix A



Black-Necked Stilts (*Himantopus mexicanus*)

This distinctive shorebird has an elegant appearance with its very long legs, upright stance, and neatly proportioned bill. It is adapted for wading through water, where it picks items of food from the surface or catching them by swinging its bill from side to side. The bill is also used to probe the mud in search of food. The diet consists mainly of aquatic insects, together with other small invertebrates. In flight, the Black-necked Stilt reveals its long, tapered wings, which are black both above and below. This bird is usually seen in groups and sometimes join mixed-species flocks of shorebirds. Preferring shallow water, which may be either fresh or salt, it roosts around water margins and in marshes. Habitats of this type dry up rapidly and are often only temporarily suitable for nesting, so birds sometimes travel about nomadically, seeking new sites. Length 14"



Common Tern (*Sterna hirundo*)

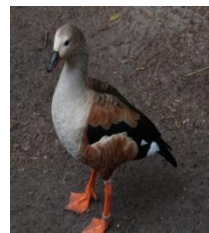
Common terns are white with a black cap, and pale gray back and wings. Their bill is red orange with a black tip. The tail is deeply forked and dark along the outer edges. Immature common terns and adults in their winter plumage have only a partial black cap. It can be distinguished from its close relative the gull by a smaller body size and longer wings. Common terns are frequently seen hovering in the air over a school of fish. With a sudden plunge downward into the water, they seize fish with their bills. Sometimes they will dive entirely below the surface of the water. Terns eat small fish such as shiners, chubs, and other minnows. They will also eat crustaceans and occasionally, insects such as dragonfly nymphs. Their winter migration takes these birds to the Atlantic coastal areas in Florida, the Caribbean, and South America. They return to their nesting sites in early spring. Arriving on their breeding grounds in May, common terns nest in colonies of 10 to 1,000 breeding pairs. They prefer sandy, well drained areas away from mammalian predators and human disturbances. Currently, common terns are using natural and human made islands in the Great Lakes with a few nesting on inland lakes.

Appendix A



Red-footed Booby (*Sula sula*)

This species breeds on islands in most tropical oceans. It winters at sea, and is therefore rarely seen away from breeding colonies. It nests in large colonies, laying one chalky blue egg in a stick nest in a tree, which is incubated by both adults for 44–46 days. It may be three months before the young first fly, and five months before they make extensive flights. Red-footed Booby pairs may remain together over several seasons. They perform elaborate greeting rituals, including harsh squawks and the male's display of his blue throat



West-Indian whistling duck (*Dendrocygna arborea*)

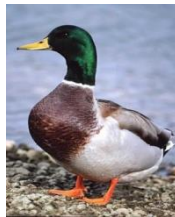
The West Indian Whistling Duck is the largest (48-58 cm) and darkest of its genus. It has a long black bill, long head and longish legs. It has a pale foreneck and light brown face. The crown, back, breast and wings are dark brown to black, and the rest of the underparts are white with heavy black markings. The West Indian Whistling Duck is widely scattered throughout the West Indies including a large breeding population in the Bahamas, and smaller numbers in Cuba, the Cayman Islands, Antigua and Barbuda, and Jamaica. It is largely sedentary, apart from local movements which can be 100 km or more. Nests have been reported in tree cavities, on branches, in clumps of bromeliads, and on the ground under thatch palms and other dense bushes.

Appendix A



Blue –winged teal (Anas discors)

Blue-winged Teals are definitely warm-season ducks, usually avoiding cold weather more than most other ducks. Large numbers may fly non-stop over Open Ocean to wintering grounds in South America. They feed on mostly plant material, including aquatic plants, seeds, and waste grain. Also eats crustaceans and insects. They forage in very shallow water, swimming with head submerged or picking items off the surface of the water. They are often found in small flocks along the water's edge. In the winter, they migrate along southern U.S. coasts and down through Mexico, Central America, and South America.



Mallards (Anas platyrhynchos)

The mallard is about 20-28 inches in length and has a wingspan of about three feet. It has a blue patch on the top side of its wings with a white line around it. The male mallard has a green head and neck with a white ring bordering it. It has a brown chest, a whitish-gray underside, brown wings and a yellow bill. The female mallard is mottled brown and tan with a white tail and an orange bill. The mallard breeds in most of Canada and the United States. It winters throughout the United States and south to Central America and the West Indies. The mallard lives in marshes, lakes, swamps, rivers, streams and ponds. Most of the mallard's diet is made up of plants. It eats the seeds of grasses and sedges and the leaves, stems, and seeds of aquatic plants. It occasionally eats insects and crustaceans and molluscs, especially when it is young. It prefers to forage in water that is less than 16 inches deep so it can duck its head down and reach plants at the bottom. After the mating season is over, some mallards in colder climates migrate in flocks to their wintering grounds. Other mallards in warmer areas where there is plenty of food will stay year-round.

Appendix A



Common moorhen (*Gallinula chloropus*)

Common Moorhens are omnivorous and feed on freshwater plants, seeds and small invertebrates (molluscs, insects and larvae). They swallow a lot of sand and gravel, perhaps to help them grind up their food. They are active both in the day and at night. Although Common Moorhens do not have webbed feet (they have long toes like other Rails), they swim well, sometimes in fairly large groups. Common Moorhens are rarely far from water and prefer freshwater habitats with still or slow-moving water with floating plants and reedbeds. Common Moorhens in our region appear to breed year-round. Some northern Common Moorhen populations migrate. Common Moorhens quickly colonise suitable habitats.



Chickens (*Gallus domesticus*)

The **chicken** (*Gallus domesticus*) is a domesticated fowl, a subspecies of the Red Jungle-fowl. As one of the most common and widespread domestic animals, and with a population of more than 24 billion in 2003, there are more chickens in the world than any other species of bird. Chickens are omnivores. In the wild, they often scratch at the soil to search for seeds, insects and even larger animals such as lizards or young mice. Chickens may live for five to ten years, depending on the breed. Domestic chickens are not capable of long distance flight, although lighter birds are generally capable of flying for short distances, such as over fences or into trees (where they would naturally roost). Chickens may occasionally fly briefly to explore their surroundings, but generally do so only to flee perceived danger.

Appendix A



Green Iguana (*Iguana iguana*) Full-grown green iguanas are usually between four and six feet, although they have been known to grow up to seven feet long. This includes the tail, however, which can make up about half the body length and, in addition to its green colour, has black stripes. Green iguanas, not surprisingly, are green in colour, but can be found in many different shades ranging from bright green, to a dull, greyish-green. Their skin is rough, with a set of pointy scales along the iguana's back. Green iguanas have long fingers and claws to help them climb and grasp.



Hickatee turtles (*Trachemys decussata angusta*)

The size of the adult carapace is up to 11 inches and can be uniformly brown or olive, but in some cases is patterned with dark and light patches. The plastron of the adult is solid pale yellow. This turtle has significantly long claws along with webbed digits. A noticeable feature is a yellowish stripe behind the eye, sometimes pinkish or orange. They are often found sunning on logs in the water along dyke roads and will jump into the water when disturbed creating a splash as they disappear. Probable life span is 25 to 30 years. They are omnivores, feeding on aquatic vegetation and insects. Nesting behaviour has never been observed, but is probably similar to other slider species. This species has been shown to interbreed with Red-eared Slider turtles which were introduced to the Cayman Islands as pets.

Appendix A



Land Crabs (Gecarcinidae)

Land crabs are terrestrial crabs who live the majority of their lives on land. Unlike their red crustacean cousin, the lobster, land crabs can range in colour from dark blue, in the case of the blue land crab, to the red, orange and black black-back land crab. Just as their colouring spans a rainbow, land crabs are found in a variety of locations and habitats. A land crab's burrow is her sanctuary. Land crabs live in sand or soil burrows up to several feet deep. These burrows are close enough to the ocean to allow water to seep in for moisture, yet deep enough to protect them from any predators or the accidental human foot. Mangroves, marshes and, of course, the oceanic coastline are prime real estate for land crab burrows. Land crab diets vary slightly from species to species, but generally include nesting sea birds, invertebrates and plants. Tender leaves, fruits, berries, flowers, beetles and other large insects are the blue land crab's preferred diet, while the black-back land crab occasionally enjoys animal matter found near the burrows. Land crab diets are limited to the plants and animals near their burrows. They typically do not stray far from the burrow when foraging for food

Appendix A

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Appendix B

Aerodrome Inspection Checklist

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ORIA/CKIA AERODROME INSPECTION CHECKLIST

Date:		Time:		<input checked="" type="checkbox"/> = Satisfactory <input checked="" type="checkbox"/> = Unsatisfactory			
Inspector(s) :							
FACILITIES	CONDITIONS	☑/☒	REMARKS	FACILITIES	CONDITIONS	☑/☒	REMARKS
Movement Areas	Pavement lip over 3"			Navigational Aids	Rotating Beacon		
	Hole 5" Diam. 3" Deep				Wind Socks		
	Cracks/Bumps				PAPI/REIL Systems		
	FOD: Gravel/Debris/Etc.				Other		
	Rubber Deposit			Obstructions	Obstructions		
	Ponding/Edge Dams				Obstruction Lights		
	Other			Fuel Farm Operations	Fencing/Gates/Signs		N/A
Safety Areas	Ruts/Humps/Erosion				Fire Extinguishers		N/A
	Drainage				Grounding Clips		N/A
	Objects/Frangible Bases				Fuel Marking/Labeling		N/A
	Other				Fuel Leaks/Vegetation		N/A
Markings and Signs	Visible/Reflectivity				Other		N/A
	Hold Lines/Signs			Construction	Barricades/Lights		
	Frangible Signs				Equipment Parking		
	Other				Other		
Lighting	Obscured/Dirty/Faded			Public Protection	Fencing/Gates		N/A
	Damaged/Missing				Signs		N/A
WILDLIFE HAZARD							
TIME							
DATE							
SPECIES OF BIRD							
NUMBERS OF BIRDS							
LOCATION							
CONDITION OF FIELD							
AIRFIELD ACTIVITY							

Safety Manager Notified of Unsatisfactory Condition: Yes/No

If no, state why.

Appendix B

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Appendix C

Wildlife Hazard Assessment Form

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WILDLIFE HAZARD ASSESSMENT FORM

Please state in your own words the events or circumstances that lead to the wildlife strike;

In your opinion was the airport meeting its obligations under current WHMP plan?

Current wildlife levels on the airport:

Damaging species				
Number present				
Local or migratory species				
Location on airport				
Reason for wildlife presence				

Identification and location of features on and near the airport that attract wildlife;

Does there appear to be any further wildlife hazards to air carrier operations at this time?

Recommended actions for reducing current wildlife hazards and any longer term actions that might be required for mitigation;

Appendix C

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Appendix D

Wildlife Control Log

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WILDLIFE CONTROL LOG

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Appendix D

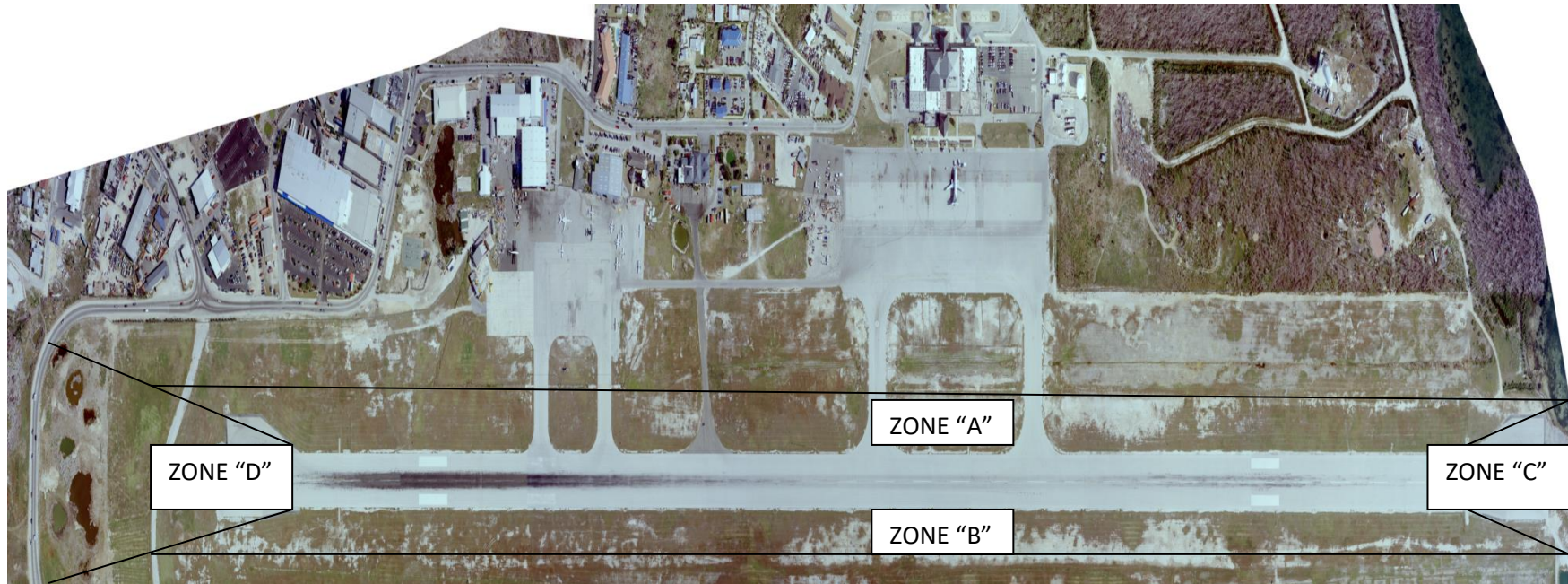
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Appendix E

GRASS CUTTING ZONES

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ORIA GRASS CUTTING ZONES



Appendix E

CKIA GRASS CUTTING ZONES



Appendix E

Appendix F

Birdstrike Reporting Form

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CIVIL AVIATION AUTHORITY OF THE CAYMAN ISLANDS
BIRDSTRIKE OCCURRENCE REPORT FORM

To be completed on discovering evidence that a birdstrike has, or may have, occurred
 To be completed for all birdstrikes, whether or not damage has been caused.

When completed, please send to:

Civil Aviation Authority of the Cayman Islands, Unit 4 Cayman Grand Harbour
 P.O. Box 10277 APO, Grand Cayman KY1-1003
 Fax: 949 0761, Email: civilaviation@caacayman.com

CAA OCCURRENCE NUMBER:



Send Original to CAA

Make additional photocopies as required

Aircraft Operator

Aircraft type & series

Aircraft reg.

Date (dd/mm/yy)/...../.....

Time (local) Hrs (24hr)

Dawn ☐ Day ☐ Dusk ☐ Night ☐

Aerodrome

Runway in use

Height (agl) (ft)

Speed (ias) (kts)

Position (if en route)

Phase of Flight

Taxi	<input type="checkbox"/>	Descent	<input type="checkbox"/>
Take-off-run	<input type="checkbox"/>	Approach	<input type="checkbox"/>
Climb	<input type="checkbox"/>	Landing roll	<input type="checkbox"/>
En Route	<input type="checkbox"/>	Ground checks	<input type="checkbox"/>

Part(s) of Aircraft Struck (describe) damaged*

Radome	<input type="checkbox"/>	<input type="checkbox"/>
Windshield	<input type="checkbox"/>	<input type="checkbox"/>
Nose (if not one of the above)	<input type="checkbox"/>	<input type="checkbox"/>
Engine nos:		
1	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>
Propeller	<input type="checkbox"/>	<input type="checkbox"/>
Wing/rotor (inc high lift devices)	<input type="checkbox"/>	<input type="checkbox"/>
Fuselage	<input type="checkbox"/>	<input type="checkbox"/>
Landing Gear	<input type="checkbox"/>	<input type="checkbox"/>
Tail	<input type="checkbox"/>	<input type="checkbox"/>
Lights	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify*)	<input type="checkbox"/>	<input type="checkbox"/>

Effect on flight			
None	<input type="checkbox"/>	Returned	<input type="checkbox"/>
Aborted	<input type="checkbox"/>	Diverted	<input type="checkbox"/>
Other	<input type="checkbox"/>		

Other Reports raised

Mandatory Occurrence Report (MOR) ☐

Other* (specify) ☐

Precipitation:

None ☐ Rain ☐

Bird Species/description (e.g. Cattle egret, Swallow)

If you are not certain of the bird species, please send a copy of this form and any remains (e.g. a wing, but even the smallest remains are useful) to:-

The CAA.

Please mark the container "Bird remains"

This identification service is provided free to aerodromes and aircraft operators.

Bird remains sent for identification Yes ☐ No ☐

Number of birds

	Seen	Struck* (enter actual number if known)
1	<input type="checkbox"/>	<input type="checkbox"/>
2-10	<input type="checkbox"/>	<input type="checkbox"/>
11-100	<input type="checkbox"/>	<input type="checkbox"/>
100+	<input type="checkbox"/>	<input type="checkbox"/>

Pilot warned of birds Yes ☐ No ☐

Note1: Copies of this form should be submitted as soon as practicable to the recipients shown below (It is not necessary to wait for confirmation of bird species.)

Aerodrome ☐

Aircraft Operator ☐

Civil Aviation Authority ☐

Bird Strike Avoidance Team ☐ (if identification required)

Remarks and other relevant information*:

Reporter Details

Name

Employer

Tel no Date

Appendix F

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Appendix G

Habit Management and Site Modification Techniques

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1. Typical Habitat Management and Site Modification Techniques

Controlling the attractiveness of an airport to birds and other wildlife is fundamental to good wildlife control. In fact, it is probably more important than dispersal techniques in terms of controlling the overall risk. If the reason for frequenting the airport is not removed or diminished the wildlife will continue to try and return no matter the consequence. Therefore it is necessary to first identify the species that represent a hazard and learn about their habits and seasonal trends. At the same time a survey of the aerodrome should be performed under scientific conditions to identify what attractants are causing the species to continue to frequent the aerodrome and a plan for mitigation must be prepared. Habitat improvement, such as improving drainage, and modifying vegetation cover is frequently expensive and may take a number of years to fully implement, and the benefits of which are not always immediately apparent. Commitment to the process from senior managers is therefore essential and all must understand the program goals and long term objectives. In the meantime wildlife will find their way to the airport for a number of reasons. Sometimes those reasons are obvious and sometimes not so obvious. However, the most prevalent reasons can be as simple as the essentials for life such as **food, water and shelter**.

- a) **Food-** It would be very difficult to remove all food sources on an aerodrome. As grass is the common vegetation on an aerodrome, grassland management has an important influence on the amount of animals and insects present either looking for food or providing a food source. All measures such as mowing and digging must be closely monitored and executed in a timely fashion not to act as an attractant during critical aircraft movement times. National and local legislation should also be established to ensure areas within 13km of the runway centre mark are not developed into sites that can increase the wildlife hazards on the aerodrome. Projects such as refuse dumps and wildlife preserves should be studied carefully to determine their feasibility and the effect they will have on existing wildlife levels at the aerodrome.
- b) **Water-** Surface water is attractive to all species, and on airport property it should appear as little as possible. In cases where large bodies of water are present it is possible to cover them with wires or netting or floating balls to make them less attractive to visiting birds. Drainage ditches or culverts can clog up with vegetation or eroded soil therefore impeding the flow of water. Insect and aquatic-life flourish in clogged ditches. Clearing the ditches and culverts on a regular basis is important to reduce this from occurring. They should also be properly graded to draw water away from the runway surfaces as rapidly as possible. Grass and other vegetation should be cut on the sloping banks. Any lakes or bodies of water should have sharp steep shores and possibly low fences to keep wildlife contained in the lake area.

Appendix G

- c) **Shelter**- Many forms of wildlife often seek shelter on airport property, whether it is a few hours a day or a few days a week this can present a serious hazard to aircraft safety. The most obvious attractant is the fact that an aerodrome provides a flat, well-groomed area which affords a clear view in all directions. Wildlife can search for food and often have great visibility on any approaching predators. The asphalt from the operating surfaces also provides a nice warm brooding area in the evening hours. The type of trees, shrubs, and landscaping plants used on the aerodrome can also act as an attractant especially in the case of fruit trees. It is a very typical practice to control the height of grass present on the aerodrome in order to make the aerodrome less attractive to birds. Most birds dangerous to aircraft prefer short grass. That is why it is recommended that grass be maintained at a height of 20 cm or more. By allowing grass to grow to a height of 20 cm or more, birds do not have good visibility and feeding is hindered.
2. **Grass Management**- The most effective habitat control measure that can be applied on an aerodrome is the management of the grassed areas. **Short grass** can provide security by enabling smaller birds to see over the wider spaces of the aerodrome for early warning of approaching dangers. It also increases populations of invertebrate animals on which many bird species rely for food. Short grass therefore does not deter most species of aerodrome birds and should be avoided. Conversely, **long grass** that falls over because it cannot support itself also has the potential to attract birds. Grass maintained at a **height of 150- to 200 mm (6" to 8")** makes it difficult for birds to locate prey at or below the surface, spoils the security effect, and reduces populations of soil invertebrate food sources. If maintained at this height, bird numbers on the aerodrome can be reduced significantly, particularly waders, small gulls, plovers, corvids and starlings. This method of grass management is often referred to as a "**long grass policy**".

Note- The height of the grass should never be allowed to obstruct the display of an aeronautical ground light, sign or other type of visual aid.

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Appendix H

Hazardous Wildlife Dispersal Methods

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1. Hazardous Wildlife Dispersal Methods

Habitat modification can be a very slow process. For the most part a few quick changes will produce results but in the long run the majority of the habitat modifications will have to take place over extended periods of time. Even when all facets of habitat modification are in place or completed there will still be a need to deter wildlife from the aerodrome. There are various dispersal methods and they all carry different levels of success. Even the most useful methods at a certain time will not work at other times. And **if used too often the same dispersal method can become totally ineffective**. 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 its effectiveness can be increased. In the case of birds for instance, continual harassment has been found to drastically reduce the amount of bird population on the aerodrome. The following paragraphs are a description of some widely used and accepted dispersal methods.

- a) **Auditory Deterrents**- include both natural and man-made sounds to scare the wildlife away. When deploying any of these tactics it should be noted that well devised strategies should be thought out first to avoid scaring the birds or other wildlife into the path of the airplanes. Some methods include; gas cannons, pyrotechnics, distress calls, and calls of predators;
- b) **Visual Deterrents**- are props or replicas of the real predators. It should be noted that while this is a good method for transient birds it would not work for very long. Habituation is the real problem here. The wildlife or birds get used to seeing the visual deterrent and therefore it no longer has the same effect. Some examples include; scarecrows, flags and streamers, lights, predator models, hawk kites, and gull models;
- c) **Barriers**- since airports often contain the necessities of life- food, water, and shelter- any way of restricting access to any of these bare essentials would have the effect of causing the wildlife to find a different place to go where they are available unrestricted. Some examples include; netting, fencing and guards, and nail strips;
- d) **Traps**- In the case of protected species or species with a high public profile it is better to capture the wildlife alive for transport to a release area off the airport. The main drawback is that live trapping can be very costly and time consuming. Trapping many species of wildlife requires knowledge of the animals' habits and skill in placement of the traps and use of baits;
- e) **Falconry**- The use of predatory birds such as falcons, hawks, or owls to drive away rodents and birds from the aerodrome. The technique is considered highly expensive and requires a lot of training, planning and strategy. It also comes with the risk of the bird actually becoming a hazard;
- f) **Canine Harassment**-The use of a trained dog, released on the airside surfaces to chase and harass birds;

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- g) **Lethal Control**- When all other methods fail and your time before flight is critical it is time to take action. Lethal control or culling is highly effective because of the deterrent effect it has on the surviving birds and it can also enhance the effect of other control techniques like scaring using the air cannons. Lethal control is best used to remove individual birds which do not depart in response to scaring action, either because of sickness or disability, or because of aberrant behavior. This method of dispersal shall be performed under the strictest rules of marksmanship with full permission from the governor. The use of weapons on an airport will spark interest from the adjoining public and every attempt should be made to notify authorities and airport neighbours that this action is taking place or will be taking place on a regular basis. As with any of the dispersal methods used proper documentation of all actions must be made.

2. Aircraft Flight Schedule Modification

Although not generally practical for regularly scheduled commercial traffic on larger airports, flight schedule adjustments might be possible in some situations. Such changes can lessen the chance of a strike with a wildlife species that has a predictable pattern of movement (i.e. - nocturnal feeding habits of large birds).

3. Land Use around Airports

Regulations should be placed on the use of lands surrounding airports to reduce their attractiveness to birds and other types of wildlife. Airports should conduct an inventory of bird attracting sites within the ICAO 13Km bird circle, paying particular attention to sites close to the airfield and the approach and departure corridors. Where national laws permit, airports, or airport authorities, should seek to have an input into planning decisions and land use practices within the 13Km bird circle for any development that may attract significant numbers of hazardous birds/ wildlife. By definition an “on airport” birdstrike is that which occurs between 0 to 60 m (0 to 200 ft. (inclusive) on landing and 0 to 150 m (0 to 500ft) (inclusive) on take-off. Land use which have caused specific problems at airports are: fish processing, **garbage dumps and landfill sites**, theatres and food outlets, **wildlife refuges**, artificial and natural lakes and ponds, golf courses, animal farms and slaughter houses. Prior planning is necessary to ensure that incompatible land uses are not allowed to become established. It is clear that robust habitat management and active bird control measures employed within airports need to be used beyond the airport boundary. Planning authorities must consider air safety when reviewing applications in close proximity to airports. Farmers need to carefully consider the air safety impact that particular land use choices may have. National environmental agencies with the power to create protected areas for birds must similarly consider the risk of bird strikes when establishing such protected areas. They must also review the appropriateness of zones currently in place. Additionally developments that actively favor geese on an even wider radius must be avoided where possible. It is recommended that conservation laws be updated to reflect the need to balance control of hazardous populations of certain birds with sensible conservation measures. This will ensure that bird populations do not become excessive and that a mutually protected environment is provided for the birds and the flying public.

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Wildlife Contact Details

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Wildlife Contact Details

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