



GHANA
CIVIL AVIATION AUTHORITY

ADVISORY CIRCULAR AC 14-032

EVALUATION OF THE IMPACT OF CHANGES TO AERODROME PHYSICAL CHARACTERISTICS, FACILITIES OR EQUIPMENT

1.0 GENERAL

Ghana Civil Aviation Authority (GCAA) Advisory Circulars from Aerodrome Safety and Standards (ASAS) contain information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Directives.

An AMC is not intended to be the only means of compliance with a Directive, and consideration will be given to other methods of compliance that may be presented to the Authority.

2.0 PURPOSE

This Advisory Circular (AC) provides methods, acceptable to the Authority, for showing compliance with Part 24 of the Ghana Civil Aviation (Aerodrome) Directives, 2011, LI 2004, as well as explanatory and interpretative material to assist in showing compliance.

3.0 REFERENCE

The Advisory Circular relates specifically to the Aerodrome GCADs and Manual of Standards (MOS).

4.0 STATUS OF THIS AC

This is the first AC to be issued on this subject.

FOREWARD

This AC is to provide guidance to Aerodrome Operators on the procedures to be used to evaluate the impact on safety of the existing operation whenever there is a proposal for change of developments at aerodrome and to notify the Ghana Civil Aviation Authority (GCAA) on the developments of aerodromes and other associated changes to the physical characteristics, facilities or equipment of the aerodrome with a view to ensure that the changes comply with certification criteria and safe management of the resulting changes.

APPROVAL

Issue No : 01	Approved by:  _____ Director-General	_____ 2015
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1.0 INTRODUCTION

Projects that involve changes to the aerodrome physical characteristics fall into 3 categories:

- Development
- Where new or upgraded infrastructure is to be provided: Examples include new or extensions to buildings, aerodrome infrastructure (such as taxiways and aprons), visual aids and navigation aids.
- Changes
- Where existing aerodrome infrastructure or physical characteristics are being changed: for example reconfiguration of stands changes to the runway or declared distances. Changes include projects that involve removing or amending existing aerodrome certificate variations.
- Maintenance
- Where existing aerodrome infrastructure is being repaired, refurbished or replaced: i.e. to ensure continuance but without changing the characteristics of the piece of infrastructure.

2.0 AERODROME CERTIFICATION

2.1 Grant of an Aerodrome Certificate

The grant of an aerodrome certificate is governed by the Aerodrome Directives, which require the GCAA to grant a certificate in respect of any aerodrome in Ghana, if it is satisfied that the aerodrome is safe for use by aircraft, having regard in particular to the physical characteristics of the aerodrome and of its surroundings. When an aerodrome receives its certificate, it is granted on the basis that it meets aerodrome certification or licensing criteria, unless variations to these criteria have been agreed by the GCAA.

An aerodrome certificate condition requires that changes in the physical characteristics of the aerodrome, including the erection of new buildings and alterations to existing buildings or the visual aids, shall not be made without prior approval of the GCAA. The purpose of this is to ensure that the GCAA is satisfied that changes in the physical characteristics meet licensing criteria and do not present a safety hazard. Failure to notify the GCAA of changes may leave the aerodrome vulnerable to costly remedial action or operational restrictions.

Project proposals should comply with the criteria contained in aerodromes Directives. Additionally, some proposals provide an opportunity to review existing variations to licensing criteria, with the intention of removal, where possible. Where a variation cannot be removed, a supporting hazard analysis should be carried out, taking into account current and foreseeable operations, and the outcome of the analysis acted upon accordingly. However, there may be circumstances where the proposal does not comply with licensing criteria, but would enhance safety. In such cases additional safety assurance will be required to assist the GCAA in examining its feasibility.

2.2 Engagement with The Authority

Whenever possible, aerodrome certificate holders should inform the GCAA of forthcoming projects and changes in good time prior to the process described in subsequent to this document. This will enable the GCAA to identify the level of specialist resources required to meet their objectives, to plan and to manage the work involved. Typically, developments involving navigation aids, instrument flight procedure changes, ATC facilities and aeronautical ground lighting might require a lead-time of 6 months.

Projects that involve changes to the aerodrome's infrastructure will require prior approval and should be submitted to the GCAA.

Projects that involve the construction of new facilities, extensions or enhancements are classed as development, and will also require prior approval from the GCAA.

Submissions and other communications should be sent either electronically by email to: info@gcaa.com.gh

Or by hard copy to the following address;

The Director-General
Ghana Civil Aviation Authority
PMB, KIA
Accra, Ghana

The GCAA will assess the proposal, identify whether the project is minor or major, using the criteria shown in this document and the Aerodrome Manual of Standards (MOS) accordingly. When necessary, the GCAA will seek involvement of specialists from within or without.

2.3 Development Meetings

An Initial Development Meeting (IDM) may be required to brief the GCAA on the project when the GCAA deems it necessary. Where possible, all aspects of the development should be covered at the IDM and a presentation, given by the aerodrome certificate holder, often proves the most successful way to brief all participants. Notes of the meeting should be produced by the aerodrome certificate holder and agreed by concerned parties.

Ideally, outline plans and drawings should be made available to the GCAA before the IDM, in sufficient time to ensure that the IDM achieves the maximum benefit. Further development meetings can be expected both whilst preparing for and during the development. It may also be necessary for some meetings to take place at the aerodrome.

The GCAA will deal directly with the aerodrome certificate holder or his appointed representative who will be expected to attend each meeting, although consultants may also attend.

3.0 AERODROME DEVELOPMENT PROJECT REQUIREMENT

Aerodrome developments are classified as major or minor as described in this document. In accordance with the GCAA requirement, when an application is made to obtain approval from the GCAA of a major development project at an aerodrome, the aerodrome shall fulfill all the requirements.

A GCAA assessment team will evaluate each development proposal in detail and classify it as major or minor depending on the level of regulatory oversight expected to see the project to a satisfactory conclusion. The team will ensure that all development proposals are evaluated consistently, will explain the reasons for the decision reached, and may also involve the aerodrome certificate holder in assisting with the evaluation process. The GCAA will inform the aerodrome in writing of the outcome of the evaluation process and the rationale for the decision.

The criteria used to determine whether a development is deemed to be major or minor may include the following, although this list is not exhaustive:

- The complexity of the development;
- The number of site visits required;
- The impact on aerodrome operations (level of disruption to normal operations);
- Changes required to aerodrome operations resulting from the new facility;
- Changes required to the Aerodrome Manual;
- Whether the development would create a new certificate variation that would require detailed evaluation;
- The need for a Flight Check (for AGL projects);
- The level of internal GCAA liaison required – Air Traffic Services, Flight Operations, Airspace/Instrument Flight Procedures etc.

Typically, the projects listed in Table 1 below are those that may qualify as a major development.

Developments that might be classed as 'major'

This list is indicative only and projects may be excluded or included, depends upon the complexity of the proposal and regulatory oversight required
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Project	Description
New Runway	A development resulting in the construction of a 'new' runway (e.g. new construction or the change of an existing grass to hard surface)
Runway Extension	A runway extension resulting in an amendment to the distances or the provision of extra RESA
Threshold Relocation (Instrument Status)	A development involving relocation of the instrument runway threshold or relocation of a non-instrument runway threshold in preparation for instrument status
AGL Installation, Instrument Status Runways	A new lighting installation or upgrade intended to facilitate additional operations(e.g. to accommodate low visibility operations and/or night operations)
New Building/Structure	A proposal involving a new terminal or terminal extension, hangers, or any other structure that may affect aircraft operations
Installation of Aids to Navigation	An installation of ILS or MLS, glide path or associated equipment, radar, or other navigation equipment
Taxiway Development	A new taxiway or significant change to the existing taxiway system
Apron Development	A new apron or apron development resulting in a substantial increase in area
New or Replacement Control Tower	Introduction of a new or replacement of Control Tower

Table-1

4.0 PROJECT PLANNING AND PREPARATION

Projects require extensive planning, and the following areas will need to be considered. However, it is stressed that this list is neither mandatory nor exhaustive and it is recognised that these elements may not be available or fully developed at the planning stage:

- Aeronautical Ground Lighting;
- Aerodrome Manual changes;

- Air traffic procedures during and post-development;
- ATC line of sight requirements;
- Bird Hazard implications;
- Building Induced Turbulence;
- Changes to the existing aerodrome operating procedures;
- Changes to Magnetic Field Density as a result of development;
- Emergency Procedures;
- Environmental impact;
- Instrument Approach and Departure Procedures and Minima;
- Project Safety Management Procedures (outline);
- Proposed timescale;
- Revised Low Visibility Procedures
- Removal of certificate variations;
- Revised runway incursion prevention measures;
- Signage;
- Site access plan.

Whenever a project is proposed, it is essential to establish whether it will result in a change to the established operating procedures at the aerodrome. It is therefore imperative that the management of any change is fully integrated into the aerodrome's safety management system and that the Aerodrome Operator's safety documentation covers this aspect.

When considering a project it is important that, at an early stage, aerodrome certificate holders undertake a hazard appraisal and risk assessment to identify the potential hazards and associated risks surrounding any proposed changes. The ICAO Safety Management Manual (Doc 9859) and other concerned GCAA documents provide guidance on hazard and risk assessment.

The level of detail required should be commensurate to the size and complexity of the project and the aerodrome, as well as to the safety hazard and change presented.

5.0 PROJECT SUBMISSION PROCESS

5.1 Introduction

For development projects and changes a 3-stage process will apply to assist aerodromes and ensure that aerodrome certificate holders meet their obligations under the licensing process. This Section details the information required for each of the 3 stages and the process to be followed.

This process must be used for development projects and changes, but may also be used for significant maintenance projects should the aerodrome certificate holder or the GCAA deem it necessary. Additionally, the process and/or elements of it can be used whatever the project type or size as determined within the aerodrome SMS. The documentation submitted may be proportionate to the size of the project. For smaller projects it is acceptable to submit Parts 1 and 2 together.

The three stage process consists of 3 separate parts as follows:

- a. Part 1: Compliance
- b. Part 2: Control
- c. Part 3: Completion

5.2 Compliance (Part 1)

i). Each development proposal should be accompanied by documentation that provides clear evidence that the proposal conforms to certification requirements detailed in aerodromes Directives and other applicable GCAA publications. It will enable the GCAA to assess the proposal as described in section-5 and should include:

- Project Overview.
- Notification Form.
- Compliance Matrix (to demonstrate that the project design meets licensing requirements).
- Scaled Drawings.

An sample Notification Form is attached at Appendix 1 and Compliance Matrix at Appendix 2.

ii). When Part 1 has been completed to the satisfaction of the GCAA, confirmation that the project is compliant with certification requirements will be given. However, if any changes are proposed to the design or build, the modified information shall be notified to GCAA.

5.3 Control (Part 2)

Following completion and acceptance of development design, the aerodrome certificate holder must demonstrate to the GCAA that the project will be managed safely. Accordingly, the GCAA will expect aerodrome certificate holders to develop safety assurance documentation that describes how the aerodrome will manage the construction works, and operating procedures, to ensure that aerodrome operations can continue safely during the project. Aerodrome certificate holders should develop and implement a formal system for the strict control, safety management, and

safeguarding and safety coordination of all airside works. Safety Assurance Documentation can take many forms but should be proportionate to the size of the project.

- i) The aerodrome certificate holder must ensure that systems for control and safe management extend to contractors working at the aerodrome.
- ii) All members of the project management team should have clearly defined responsibilities and accountabilities in the project programme. During construction on an aerodrome, safety levels and standards of conduct must be maintained. These are essential to promoting safety, preventing accidents and meeting the aerodrome certificate requirements.
- iii) It is important that accurate, up to date information is made available stakeholders involved in the project, including the GCAA, both as part the project planning and during the work itself. Therefore, the safety assurance and project management documentation may include any or of the following information:
 - A clear statement of the supervision structure for the safety management and monitoring of works, including contact details of key duty personnel concerned, for both project and aerodrome management. This should include clear responsibilities, including the person with overall accountability for the development;
 - Aerodrome operating procedures during the development, including contingencies;
 - Arrangements for liaison meetings/briefings between the aerodrome management and the contractors;
 - Appropriate plans and diagrams relating to the contraction process;
 - Control of contractors;
 - Day and night start, control and completion of work procedures;
 - Communications procedures between the aerodrome operating units and construction teams;
 - Emergency procedures;
 - Method of working;
 - Plans of site and diagrams of works;

- Points of contact - aerodrome management and contractor, including identification of manager with overall responsibility;
- Site access plan;
- Site safeguarding and marking;
- Weather minima that will affect the works;
- The general layout of the aerodrome including airside access points;
- The location and limits of works areas;
- The specific security access points to be used and the location and marking of the access routes to be used to reach airside sites;
- Methods of control and access for works sites within the Apron and Manoeuvring Area including arrangements for crossing taxiways and runways (if applicable);
- The methods and equipment to be used for protecting, marking and lighting the boundaries of works sites and for protecting normal aerodrome operations in the vicinity of the site. Also the requirement to control site lighting to prevent distraction of aircraft crews, drivers and ATC;
- The strict timing for the setting up of work sites, the start of work, daily permitted working hours at the site and procedures to be followed for starting and stopping work;
- Aerodrome emergency procedures, including response times during periods of WIP, should not be compromised. This extends to ensuring compensatory arrangements are in place to cover depletions of fire main or fire hydrants when the fire main has been deactivated due to work in progress;
- Vehicle and equipment requirements, operating rules and the requirements for staff discipline;
- Calculating and communicating amended runway declared distances;
- Maintaining appropriate pavement friction characteristics;

- Information on special safety requirements for aircraft operations in the vicinity of works and the methods of control available on the manoeuvring Area, including radio telecommunication procedures if appropriate;
- Requirements for the operation of cranes and other tall structures;
- Arrangements for the receipt and movement of heavy or bulky loads;
- Requirements for vehicle and area cleanliness, also the implications of Foreign Object Debris (FOD) and loose material hazards for aircraft operations;
- Arrangements for the disposal of waste;
- Information on the safety implications for the site and staff of special aircraft hazards including blast, vibration, fumes and noise;
- Information on the effects of strong winds at the aerodrome;
- Site safety, including personnel protection.

iv). Aerodrome certificate holders should ensure that all stakeholders are notified of aerodrome projects in a timely manner. These communications should continue through the project and may include safety instructions, NOTAMs or other local procedures.

v). Before contractors start work at any aerodrome/airside location, aerodrome certificate holders should provide a comprehensive safety briefing and submit plan construction operation document discussing the results of ongoing hazard analyses, to ensure all information needed to achieve the safe completion of any works or activity is clearly understood and agreed. Additionally, aerodrome holders should hold regular progress meetings to ensure operational objectives continue to be met.

vi). When the GCAA is satisfied and has been assured that the aerodrome can continue to operate safely during the project construction, approval will be given to commence work.

c. Completion (Part 3)

i) Transition into service is a critical phase of the project and can present complex challenges. Careful planning and robust procedures need to be established to ensure that the change is introduced safely and efficiently. This may be demonstrated by

undertaking a process of operational readiness, which may include simulations, testing, audits or sample inspections, involving appropriate key stakeholders.

ii) On completion of the development, but prior to operational use, the aerodrome certificate holder should confirm to the GCAA that the project meets the agreed design criteria and is fit for purpose. The GCAA will confirm that the new facility is accepted and may be brought into operation.

iii) Safety performance monitoring should be a key process of an aerodrome's SMS, to ensure that the introduction of the new facility continues to maintain safety standards at the aerodrome.

6.0 MAINTENANCE PROJECTS

Maintenance projects can vary enormously in size. Much maintenance work involves short-term minor works, such as painting, planned periodic replacements (e.g. light cleaning in accordance with a preventative maintenance schedule), refinements to systems/infrastructure and small repairs to aerodrome infrastructure, which can be completed in short timescales and with limited disruption. Smaller planned or routine maintenance works need not be notified to the GCAA, although the Aerodrome Inspector would expect to be kept informed of some of these activities.

However, maintenance may also involve large, longer-term projects (weeks/months), which may involve many key stakeholders, and which may have significant impacts on operations and so test the aerodrome's safety management system. Examples of major maintenance would include runway rehabilitation and replacement of aerodrome ground lighting systems. Major maintenance projects such as these should be notified directly to the Aerodrome Inspector, who will advise on the approval required and maintain regulatory oversight of the project.

In certain circumstances, however, the Inspector might conclude that the project qualifies guidance in for the submission process described in this document. In such cases the preceding chapters should be followed.

7.0 REFERENCES

- Ghana Civil Aviation Authority Act 678 (as amended by the GCAA (Amendment) Act, 2016, Act 906
- Ghana Civil Aviation (Aerodromes) Directives, 2011 (L.I 2004)
- Aerodrome Manual of Standards (MOS)
- ICAO Annex 14 – Volume 1