

Referenced to Nigeria Regulations



Advisory Circular

NCAA-AC-ARD002-1

NIGERIA CIVIL AVIATION AUTHORITY (NCAA)
ISSUE NO 1

DATE: 17th July, 2023

PROCEDURE FOR THE ESTABLISHMENT OF AN AERODROME

Made this ^{17th} day of ^{July} 2023

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Director General of Civil Aviation

1.0 GENERAL

Nigeria Aviation Authority Advisory Circulars from Aerodrome and Ground Aids (AGA) Division contains information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Regulations.

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

2.0 PURPOSE

This Advisory Circular provides procedures to be followed by an applicant intending to establish and/or develop an aerodrome in compliance with Nig.CARs Parts 12.1.1.4, as well as explanatory and interpretative material to assist in showing compliance.

3.0 APPLICABILITY

This guidance applies to applicant intending to establish and/or develop an aerodrome.

4.0 REFERENCE

The Advisory Circular relates specifically to Nig. CARs. Part 12.1.4.12 and 12.2.9.1 VOL I.

5.0 STATUS OF THIS AC

Not Applicable

AMENDMENT PROCEDURES

The Director, Aerodrome and Airspace Standards is responsible for the development, issuance and control of amendments to this document as well as ensuring that the AC is updated in the technical library for staff and the website ncaa.gov.ng for public use.

Each page will show the document number, issue/amendment number, issue date and page number at the base of the page.

All amendments must be recorded in the Record of Amendments.

Any observation made or contribution to the content of this document by the user should be directed to the following address for consideration and adoption

Nigeria Civil Aviation Authority

Corporate Headquarters

Nnamdi Azikiwe International Airport,

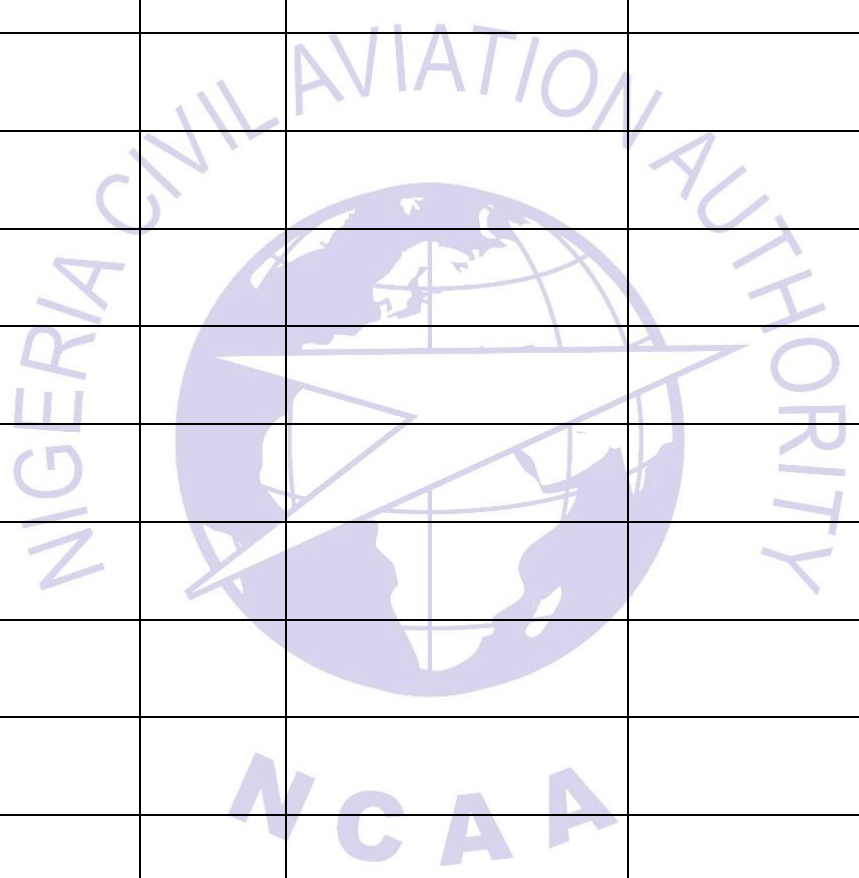
FCT, Abuja.





RECORD OF AMENDMENTS

Issue No/ Amendment No	Page(s) Affected	Date Entered	Entered By	Signature
1	All	17th July, 2023		



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NCAA



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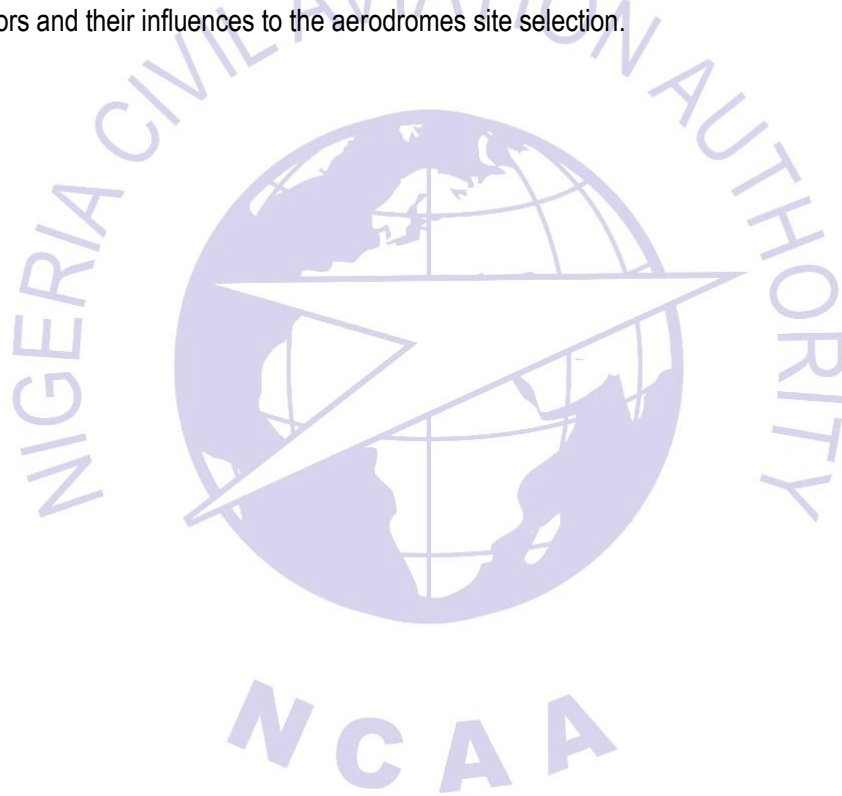
1 INTRODUCTION

This Advisory Circular serves as a guide to an applicant intending to establish an aerodrome for non-military operations in Nigeria. The Civil Aviation Act in-force requires that “a person shall not establish an aerodrome for non-military purpose unless that person holds an authorization issued by the Authority for that purpose”.

An applicant shall apply to the Authority in writing, requesting for guidance on the processes for the establishment and development of an aerodrome.

The Authority’s Scheme of Charges stipulates the prescribed fees for the establishment, development and certification of aerodrome.

For aerodromes to be established in Nigeria it is required to comply to all standards provided in the Nig.CARs Part 12.1.1.4, including the consideration and analysis of certain engineering factors and their influences to the aerodromes site selection.



2 STEP ONE - EXPRESSION OF INTENT

- (a) An application for the establishment of an aerodrome is initiated by writing a letter of intent addressed to the Director General, Nigeria Civil Aviation Authority, expressing interest for the establishment of an aerodrome at a specified location, and stating the purpose of the intent.
- (b) The Authority then schedules an appointment with the applicant to discuss the site selection process.

2.1 Selection of site for new aerodromes

- (a) The applicant is advised to engage suitably qualified experts for the conduct of a site identification study prior to any site assessment by the Authority. The applicant may select a site for the construction of an aerodrome based on a number of factors as detailed in chapter 5 of ICAO Doc 9184 Part 1 (Airport Master Planning). The Authority should accept the selected site prior to commencement of any construction activities. In selecting a suitable site for the project, the applicant together with the consultants should discuss various alternatives based on user survey and considerations as outlined in chapter 5 of ICAO Doc 9184 Part 1 (Airport Master Planning) and ICAO Doc 9184 Part 2 (Land Use and Environmental Management).
- (b) A comprehensive narrative report should be prepared at the end of the site selection exercise. Elements of the report should be included in the Project Proposal that should be submitted to the Authority during formal application.
- (c) The report should be thorough, and should include various considerations made in determining the choice for the location of the aerodrome, especially the determination of the orientation of runways. The report shall include maps/drawings to support the core narrative report. Section 4.2 discusses the contents of the application package.

2.2 Site Inspection and Evaluation

- (a) The Authority will conduct a site inspection, evaluation and grant an approval of the proposed site, to ascertain its suitability for the project, as well as validity of the information provided.
- (b) Upon payment of the applicable fees by the applicant, the Authority will assign a team of inspectors to conduct initial inspection of the site.
- (c) The site inspection will take into consideration the amount of land available for construction of the runway and the present use of the land contained in the approach and departure paths. Other considerations are; the type of operations to be conducted at the airport and conditions of identified obstacles.
- (d) When a proposed site is found unsuitable for the project, the Authority at its option, will guide the applicant in considering other alternatives. This will require detailed desktop studies and field work.
- (e) The applicant will be responsible for the provision of necessary detailed maps, as may be required by the Authority. The Authority's team of Inspectors will require maximum co-operation from applicant's technical team in this process.
- (f) It is recommended that local agencies are "taken on-board" right from the initial stages as this will facilitate future actions and ensure co-operation.

- (g) It is desirable that local representatives from the District Council, District Survey Office, District Environmental Protection Agency, and Town and Country Planning office join the applicant's technical team for the site assessment.
- (h) After evaluation of the proposed site, the applicant is invited to a meeting to discuss about the outcomes of the site evaluation process as detailed in section 2.4 below.

2.3 Determinations

- (a) Determinations after site inspection and evaluation will be issued in one of the following categories:
 - (i) **No Objection:** to the proposal when the DGCA, NCAA is satisfied that the proposed site will not adversely affect the safe and efficient use of airspace by aircraft nor the safety of persons or property on the ground.
 - (ii) **Conditional:** when the study identifies minor objectionable aspects of a proposed site but specifies conditions which if complied with, satisfies the DGCA, NCAA that the proposed site will not adversely affect the safe and efficient use of airspace by aircraft, nor the safety of persons or property on the ground.
 - (iii) **Declined:** when the study identifies major objectionable aspects of the proposed site. The determination will specify the reasons for finding the proposed action objectionable.
- (b) The determination will be issued to the applicant and copied to appropriate local authorities, and other interested persons.
- (c) A determination issued by the DGCA, NCAA does not pre-empt or waive any applicable laws or regulations of any other governmental body or agency.

2.3.1 Issuance of Determination

- (a) The NCAA will issue and communicate the determination to the applicant. The determination will communicate the NCAA's approval either of the site or of an objection. An objectionable determination may be accompanied by an explanation of the circumstances that justified the decision. If there are items that can be corrected to meet the requirements for issuance, these will be included in the explanatory statement. If the DGCA issues a no objection determination of the site, all adjacent property owners identified on the application may be notified.
- (b) The property owners or any person, affected by a determination issued by the DG, NCAA, has thirty (30) days to file an appeal with the Authority for reconsideration. The appeal must be in writing and received at the offices of the Authority within thirty (30) days of the determination.

2.3.2 Effective Period of the Determination

- (a) Un-objectionable and conditional determinations will contain a void date. The purpose of this is to allow for the orderly planning of aerodromes and to eliminate needless protection of airspace.
- (b) An extension to the void date may be granted if there are valid reasons for not completing the action by the void date.

Note - If construction work on the Aerodrome does not begin within the determination void or expiration date, a new airport site approval is required.

2.3.3 Revision of the Determination

A determination can be revised if any new facts that changes the basis on which the determination was made are identified.

2.4 Pre-Application Meeting

- (a) The objective of the Pre-application Meeting is to provide the applicant with; the outcomes of the site evaluation assessment, an overview of the approval process and technical requirements, including financial obligations. Key management and technical personnel that may be involved in the project should attend.
- (b) If the outcome of the site evaluation assessment is not satisfactory to the Authority, the Authority will state the reasons, and advice the applicant to conduct another site selection study in compliance with the relevant requirements.
- (c) If the outcome of the site evaluation is satisfactory and acceptable to the Authority, an application form including all relevant documents published by the Authority will be provided. In addition, the Authority will answer questions the applicant may have about the process.
- (d) The applicant is also referred to other relevant State Entities to obtain clearance with the necessary documentations e.g. environmental impact assessment, land use, wildlife protection and dispersal clearance and security issues. In this regard, the applicant would be required to seek approval from the appropriate authorities in charge of land use in the area in which the airport is to be sited. The applicant will also be required to obtain and furnish the Authority with a letter from the Environmental Protection Agency confirming that an Environmental Impact Assessment (EIA) has been satisfactorily conducted. A copy of this EIA must be forwarded to the Authority during the formal application.
- (e) At the end of this meeting, the Authority should be satisfied that the applicant has a clear understanding of the process, and is willing to proceed with the preparation of a formal application and development of other relevant documentations as required.

2.5 Public Forum

There should be a Public Forum involving local community. The purpose of the public workshop is to inform the public about the airport planning process and to receive comments.

3 STEP TWO – FORMAL APPLICATION

3.1 Submission of the Application Package

- (a) This is where the applicant makes a formal application to the Authority. The minimum application package including; a completed Application Form, Project Proposal and Airspace Plan should be submitted to the Director-General, NCAAA (see section 4.2 below).
- (b) Upon submission of the application for a proposed aerodrome, and to initiate the development procedures, the applicant should appoint a Project Co-ordinator (PC) to liaise with the Authority.
- (c) The PC will make available all relevant information that will highlight the fundamental issues and scale of development of the project.
- (d) The Authority will initiate an Initial Development Meeting (IDM) to enable the applicant to brief the Authority about the project.
- (e) Although consultants may attend development meetings, the Authority will only deal with the PC or the proposed aerodrome owner, at least one of whom should always be in attendance.
- (f) The Authority will not deal with consultants directly unless it is absolutely necessary for the advancement of the project.
- (g) Aerodrome development will require extensive planning, and the following areas, among others, will need to be considered right from the start:
 - (i) Focal point contact for the project
 - (ii) Scope of the development
 - (iii) Contractors involved
 - (iv) Proposed timescale
 - (v) Outline plans
 - (vi) Environmental impact issues
 - (vii) Aerodrome manual requirements, as required
 - (viii) Air Navigation Services issues
- (h) Development meetings will be arranged between the Authority and the project coordinator/aerodrome owner as and when they are deemed necessary by either party.
- (i) Subsequent meetings may not involve all the participants from the IDM, but major participants including at least one representative of the proposed aerodrome owner must attend.
- (j) It may be useful to arrange meetings at the aerodrome site. This is essential in the case of on-the-spot confirmation of relevant issues.

3.2 Contents of the Application Package to be submitted by the Applicant

- (a) The application package typically consists of;
 - (i) Completed Application Form (See Appendix 1);

- (ii) The Project Proposal;
 - (iii) Airport Master Plan and Layout Plan;
 - (iv) Aerodrome Design Report
 - (v) Airspace design procedures; and
 - (vi) Obstacle charts
- (b) In addition to the above, the applicant is expected to produce the following;
- (i) Financial Statement from a recognized local banking institution,
 - (ii) Building permit from the Ministry of Lands and Country Planning
 - (iii) Insurance cover from a renowned insurance company
 - (iv) State Security Clearance from the Office of National Security
 - (v) Relevant clearance from the National Protected Area Authority
 - (vi) Relevant clearance from the Environmental Protection Agency (EPA)
 - (vii) Any other information that may be deemed necessary by the Authority at the time of application/from time to time.

3.2.1 Project Proposal

- (a) The Project Proposal must be included in the application to be submitted. The proposal should detail the background and scope of the project; including the purpose and justification, location of the aerodrome, criteria for the selection of the critical aircraft and the aerodrome design code.
- (b) It must also include an analysis of weather elements that form parameters for the determination of runway length requirements and orientation. It must be noted that various forms of wind rose for different applications exist. Weather data sources and acceptable aeronautical wind rose analysis must be provided in the proposal. An analysis for the determination of runway requirement must also be included.
- (c) The proposal may also include a detailed description of the Airspace design analysis and plan. There should be an indication of the approach category being considered, based on the critical aircraft, weather visibility minimums and ground instrumentation (as applicable).

3.2.2 The Airspace Plan (Drawing)

- (a) The applicant should also establish the Obstacle Limitation Surface, to develop an obstacle chart for the aerodrome and its surrounding (15km radius). This chart should form part of the project proposal.
- (b) Aerodrome Obstacle Limitation Surfaces (plan and profile) and Runway Protection Zones must be depicted on a topographical sheet. Airspace plans will be based on the Airport Airspace Analysis.

Note - topographical sheet should cover up to areas within 18.5km from centre of proposed aerodrome.

- (c) The Approach and Departure profiles should be depicted in the plan. Tabulation of penetrating and close-in obstacles (natural and man-made) and alternate treatment plan should also be shown.

3.2.3 Airport Layout Plan (ALP) and/or Master Plans

- (a) Once a determination of "No Objection" has been issued by the Authority, the applicant should prepare and submit detailed aerodrome designs, Airport Layout Plans (ALP) and Airport Master Plans (AMP), as may be required by the Authority for assessment and approval prior to the commencement of construction.
- (a) An Aerodrome is a complex organisation with many interactive disciplines and functions. Therefore, even the simplest of developments may need inter-departmental co-ordination. The design of new aerodromes and any adjustments to existing ones shall take into account, land-use and environmental control measures.
- (b) The master plan shall:
 - (i) Contain detailed plans for the development of aerodrome infrastructure; (ii) contain a schedule of priorities including a phased implementation plan; and
 - (iii) be reviewed periodically to take into account current and future aerodrome traffic.
- (c) Where necessary, aerodrome stakeholders, particularly aircraft operators, must be consulted in order to facilitate the master planning process using a consultative and collaborative approach.

Note - further guidance on the preparation and submission of an Airport Layout Plan is contained in ICAO Doc 9184 Part 1 (Airport Master Plan).

3.2.4 Aerodrome Design Report

- (a) Detailed geometric and pavement designs will be submitted to the Authority for approval along with the ALP/AMP sets.
- (b) Design standards should conform to the specifications sets out in the Nig.CARs Part 12 vol. I subpart 2 Strength Rating of Aerodrome pavements. Analysis for various sectors of the movement area shall be discussed in the Design report. Completed Design report shall comprise information on the following aspects:
 - (i) Gross Allowable Aircraft Weight
 - (ii) Design Criteria
 - (iii) Typical Sections
 - (iv) Design Details
 - (v) Soil Analysis
 - (vi) Subgrade Characteristics
 - (vii) Design of terminal and other aerodrome core infrastructure facilities shall be included in the Report.

3.3 Review and Approval of the Application

- (a) Upon receipt of the application materials, the Authority will acknowledge receipt, and a cursory review will be conducted on the package submitted to ensure that the entire package meets the criteria for acceptance and further analysis.
- (b) Once the application package is accepted, a team of Inspectors will be set up, to conduct a detailed review of the package, including a comprehensive study of the Project Proposal and accompanying drawings.
- (c) During this process, the applicant may be requested to make presentations to the team of evaluators constituted by the Authority.
- (d) Once satisfied with the designs, the Authority will approve and issue an authorization for the commencement of aerodrome construction works.
- (e) If the applicant requires further direction for clear understanding of the process to enable them proceed with the development, the applicant can arrange for a meeting with the Authority including the applicant's technical team.



4 STEP THREE – CONSTRUCTION REQUIREMENTS & AUTHORISATION

The requirement for the development of an aerodrome can be found in the NCAR Part 12 and ICAO Doc 9157 - Aerodrome Design Manuals.

4.1 Submission of Work Schedule

- (a) The PC will provide the Authority with a detailed outline of the scope of the works involved in the project's development, the purpose being to present an overall picture of the extent of the proposal and to enable the Authority to monitor the project.
- (b) A chart (e.g. Gantt chart) is required, detailing the schedule of each phase of the development. For example:

4.1.1 Phase 1- Work scope

Site prep, detailed design of runway, link taxiway, apron, perimeter road, drainage, terminal building, temporary ATC Tower

4.1.2 Phase 2- Work scope

Parallel taxiway, main access road, power house/NEPA intake station, terminal building

Key Project Dates

(i) completion of parallel taxiway	DD/MM/YYYY
(ii) completion of perimeter road	DD/MM/YYYY
(iii) (iii) completion of terminal building/control tower	DD/MM/YYYY
(iv) completion of airfield lightings	DD/MM/YYYY
(v) completion of installation of ATS/CNS/MET facilities	DD/MM/YYYY

- (c) The work plan should list the name(s), position, contact telephone numbers and e-mail address of the person who holds a position of responsibility within the development programme.
- (d) The PC will regularly update the Authority of the project status (e.g.) of the current phase of development, and at least two (2) weeks to the project completion date. Follow-up inspections will be scheduled by the Authority.

4.2 Construction Requirements

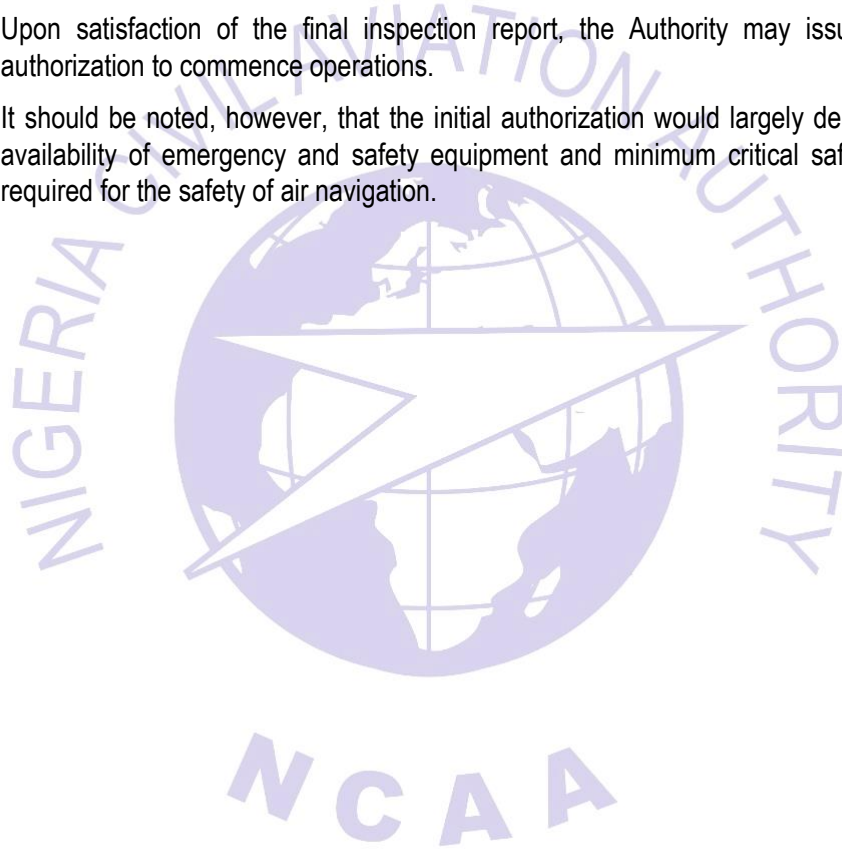
- (a) During construction phase, it is advised that the applicant constantly engage the Authority in discussions on the project.
- (b) The applicant may request the Authority for advice during construction works.
- (c) The Authority may also conduct ad-hoc inspections of the project and may request for material and construction data or records of quality arrangements in place.
- (d) Information on recorded samples and laboratory analysis of material properties should be certified by laboratories of competent institutions in order to be accepted by the Authority. Materials and construction standards for the proposed construction must meet

the specifications set out in the International Civil Aviation Organisation (ICAO) Aerodrome Design Manuals.

- (e) Upon completion of the project, the applicant must request for final inspection by the Authority. The Authority will assign Inspector(s) to conduct the final inspection. The inspection will determine what and if any items must be addressed prior to the issuance of an initial authorization to commence flight operations. A final inspection report will be submitted to the DG, NCAA with a recommendation to grant or deny the issuance of an initial authorization to commence flight operations.

4.3 Initial Authorization to Commence Flight Operations

- (a) The submission of the construction completion report to the Authority does not permit the applicant, for commencement or resumption of operations at the aerodrome.
- (b) Upon satisfaction of the final inspection report, the Authority may issue an initial authorization to commence operations.
- (c) It should be noted, however, that the initial authorization would largely depend on the availability of emergency and safety equipment and minimum critical safety facilities required for the safety of air navigation.



5 STEP FOUR – DEMONSTRATION PHASE AND CERTIFICATION

REQUIREMENTS

- (a) The operator/owner must show proof of competence in operating the aerodrome safely within the first twelve (12) months of operations.
- (b) The Aerodrome Operator/owner shall be subjected to ad-hoc inspections by the Authority. The Aerodrome Operator/owner will be required to produce relevant records and operational procedures.

Note - Proof of competency can only be demonstrated through the certification or licence or grant of an operating permit process.

- (c) The Aerodrome Operator/owner is required to make formal application for the certification/licensing or grant of an operating permit for the aerodrome (as appropriate), not later than 180 days of the initial authorization to commence operations. Depending on the type of expected activities at the aerodrome, the applicant shall apply for either aerodrome certification/licensing or operating permit. Please refer to the Nig.CARs Part 12.2.1.3 and NCAA-AC-ARD002 for regulations related to the Certification of Aerodromes.
- (d) Delay in this process may warrant the Authority to impose sanctions including suspension of operations at the aerodrome, or closure.
- (e) The Authority shall also prevent flight operations into the aerodrome for reasonable cause when safety is in compromise.



APPENDIX 1 – APPLICATION FORM FOR CONSTRUCTION OF NEW AERODROME OR EXPANSION OF AN EXISTING AERODROME

	NIGERIA CIVIL AVIATION AUTHORITY DIRECTORATE AERODROME AND AIRSPACE STANDARDS APPLICATION FOR CONSTRUCTION AND EXPANSION OF AERODROMES	Form No: NCAA-AC-ARD035
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NOTICE FOR CONSTRUCTION AND EXPANSION OF AERODROMES

A. Airport Owner		B. Airport Manager (Complete if different than the Airport Owner)	
1. Name and Address <input type="checkbox"/> Check if this is the Airport Physical Address		1. Name and Address <input type="checkbox"/> Check if this is the Airport Physical Address	
2. Phone	3. Email	2. Phone	3. Email
C. Purpose of Application (Answer all questions that apply)		D. Name, Location, Use and Type of Landing Area	
1. Construct or Establish an:	<input type="checkbox"/> Airport <input type="checkbox"/> Heliport <input type="checkbox"/> Other		
	1. Name of Landing Area	2. Loc ID (for existing)	
	3. Associated City/Town	4. Distance from City (km)	
	5. Direction from City		
	7. Latitude	8. Longitude	9. Elevation
2. Construct or expand a:	<input type="checkbox"/> Runway <input type="checkbox"/> Taxiway <input type="checkbox"/> Other		<input type="checkbox"/> International <input type="checkbox"/> Domestic <input type="checkbox"/> Private
3. Description:	11. Ownership:		<input type="checkbox"/> Private <input type="checkbox"/> Public
E. Aerodrome Data			
1. Airport (use second page if needed)		2. Heliport (use second page if needed)	
RWY ID		Helipad ID	
Lat. & Long.		Lat. & Long.	
Surface Type		Surface Type	



Runway Length (m)			TLOF Dimensions	
Runway Width (m)			FATO Dimensions	
Lighting Category (as applicable)			Lighting (if any)	
			Ingress/Egress (Degrees)	
Elevation (AMSL)			Elevation (AMSL)	
VFR or IFR			Elevated Height (AGL)	

F. Operational Data (Indicate if the number provided is Actual or Estimated)

	1. Number of Based Aircraft		2. Average Number of Monthly Landings	
	Present or Estimated	Estimated in 5 Years	Present or Estimated	Estimated in 5 Years
Single Engine				
Multi Engine				
Jet				
Helicopter				
Glider				
Ultralight				

3. What is the Most Demanding Aircraft that operates or will operate at the Airport? (Provide approach s if known) ceed, rotor diameter, etc.

4. Are IFR Procedures for the Airport Anticipated? Yes No. If Yes, within year s

G. CERTIFICATION: I hereby certify that all of the above statements made by me are true and compl knowledge. ite to the rest of my

1. Name, title of person filling this notice	2. Signature (in Ink):		
	3. Date	4. Phone	5. Email

An application should be made by an applicant who intends to do any of the following:

- (1) Construct or otherwise establish a new airport or activate an airport.
- (2) Construct, expand, realign, or activate any runway, or other aircraft landing or take-off area of an airport.
- (3) Construct, expand, realign, or activate a taxiway associated with a landing or take-off area on a public-use airport.
- (4) Change the status of an airport from private use (used by the owner/used by the owner and other person authorized by the owner) to an airport open to the public, or from public-use to another status.
- (5) Change status from IFR (Instrument Flight Rules) to VFR, or from VFR to IFR.
- (6) Establish or change any traffic pattern or traffic pattern altitude or direction.

Additional information required

For an Airport/Aerodrome: Provide detailed drawing and/or imagery of the proposed landing area depicting latitude, longitude, length, and width.

- The document(s) must show the runway orientation in relation to known roads, terrain etc. such that the Authority can locate the runway(s) accurately and efficiently.
- Notate any obstructions (buildings, high-line wires, roads, railroads, towers, etc.) near the runway.
- You must include runway end coordinates and the runway elevations on the runway centerline.

For a Heliport: Provide detailed drawing, imagery or map identifying the exact location of the heliport in red.

- The document(s) must show the helipad(s) in relation to known roads, terrain etc. such that the Authority can locate the heliport accurately and efficiently.
- Provide site plan depicting the landing pad in relation to buildings and other obstacles (light poles, fences, trees, bollards, parking lots) near the landing area.
- Provide dimensions of the landing pad and the height of the buildings/obstacles and their distance from the helipad.
- Provide a heliport layout plan (in accordance with Nig.CARs Part 12 Vol II, Heliports) identifying the proposed marking, lights, beacon location, windsock(s), the approach/departure paths (if room allows, the heliport layout plan may be shown on the site plan).

APPENDIX 2: SUBMISSION OF DESIGN DRAWINGS

The concept design drawings of the proposed aerodrome is required to be submitted by the applicant to the Authority for appraisal before commencement of any work and should contain and include the following information and format:

1. Title Sheet

Every sheet should show the following:

- (a) Applicable scale
- (b) Signature and revision blocks completed with signature and date of latest revision
- (c) Existing and/or ultimate airport development elements
- (d) Map legend depicting existing and ultimate elements with different
- (e) symbology (Note: Not required on project title sheet)
- (f) North Arrow

2. Project Title Sheet

The project title sheet provides a quick overview of the airport's location, navigational aids, aircraft design type, ALP sheet index, and signatures. Items that must be shown on a title sheet include the following:

- (a) State outline depicting aerodrome boundaries.
- (b) Vicinity map – showing immediate area around the airport
- (c) Location map – showing general area of the location of the airport
- (d) Index to sheets
- (e) Wind rose – all weather and Instrument Flight Rules (IFR) weather wind rose
- (f) Wind coverage data table
- (g) Airport data table
- (h) Approval signature block – should contain revision block and signature blocks for the following:
 - (i) Client of the Airports
 - (ii) Client's Engineer
 - (iii) Consultant Engineers

3. Airport Layout Drawing

This sheet is a detailed, scaled representation of existing and ultimate airport facilities. It provides pertinent dimensions and clearance information pursuant to applicable standards. This sheet should be scaled to show the entire airport facilities such as: (a) Physical features

- (i) Runway
- (ii) Taxiway/links

- (iii) Runway turn pad (if applicable)
 - (iv) Apron
 - (v) Runway/Taxiway strips
 - (vi) Runway end safety areas
 - (vii) Terminal/Technical Building
 - (viii) Fire Fighting Station
 - (ix) Power house
 - (x) Meteorological Station/ AWOS Sensors' locations
 - (xi) Control Tower
 - (xii) Car parking area
 - (xiii) Fuel farm
 - (xiv) Sewage treatment plant
 - (xv) Aircraft hanger
 - (xvi) Access/emergency roads, access gates and crash gates
 - (xvii) wind direction indicator
 - (xviii) Airfield lighting (xix) Approach lights
 - (1) ILS Equipment shelter and Antennas Structure locations
 - (2) CVOR, DVOR, NDB Equipment shelters and the Antenna structure (for Terminal) locations.
 - (xx) Surveillance RADAR Equipment shelter and Antenna Structure location, etc
- (b) Airport Reference Point (ARP) – latitude and longitude to the nearest second based on WGS-84
- (c) Elevations - measured to the accuracy of one-half metre) above mean sea level including geoidal undulation value

4. Airport Airspace Drawing

The airport airspace drawing sheet(s) (Obstacle Chart Type A and Type B) should include all Obstacle limitation surfaces as contained in the Nig.CARs Part 12.2.4, plus a drawing of the approach surfaces to the full length of the approach surface. The surfaces shown should be for the **ULTIMATE** runway lengths. The drawing is intended to show the relationship between the imaginary surfaces and the topographical features. Emphasis should be made on defining significant objects and elevations that are critical to airport operations. All obstructions, natural and constructed, within any imaginary surface must be shown in a schedule of obstructions with the proposed disposition. The schedule should show a reference number for all obstructions shown on the plan and profile drawings. The disposition of the obstruction must be shown along with the effective date of the disposition.

5. Inner Portion of the Approach Surface Drawing

This drawing is an easily-readable, scaled detail of the approach surfaces. A separate sheet for the inner portion of the approach surface drawing will be required for each end of each runway. It should be drawn at a scale to show the approach surface from the ground to at least a height 100 feet (30m) above the elevation of the end of the runway. There should be a plan and profile drawing on each sheet. The approach surface drawing sheets may show other zones, i.e. runway protection zone.

A separate schedule of obstructions should be included on each sheet for each approach surface showing the extent of the penetration and the proposed disposition of the obstruction. Each disposition must have a date associated with it. The schedule of obstructions should give coordinates for each obstruction listed. Obstructions should also be depicted on both the plan and profile drawings.

6. Terminal and/or Building Area Drawing

The purpose of this sheet is to depict all buildings and their related infrastructure at airports for reviewing safety and security. The building area drawing should show all buildings, existing and planned, aprons with tie down locations depicted, parking areas, fuelling facilities, and the building restriction line (BRL) with elevations/heights.

Note - The BRL represents the boundary that delineates the airside and landside of the airport, and identifies areas on airport property suitable for building area locations based on airspace and visibility restrictions.

A table should also be included listing each building's coordinates, function, and elevation.

For airports with commercial service, terminal area drawings as well as general aviation (GA) areas should be shown.

7. Land Use Drawing

This sheet provides details for current and future uses of property within and surrounding the airport boundaries. It also serves as a planning tool for communities to ensure that growth in the area around the airport will be compatible in use and not impede future aeronautical expansion. The land use map should show existing, as well as recommended land uses for all properties within the ultimate airport boundary, and in the surrounding areas. Property use and zoning should be identified as residential, commercial, industrial, parks, etc.

8. Zoning Map (Site Plan)

The purpose of this is to identify the extent of the land allocated and approved by the States Planning and Development Authority. It may be utilized by the airport operator as well as the local Planning and Development Authority, for use in exhibits for zoning ordinances, planning, and issuing permits for development around existing and proposed airport designs. The map should show all the existing property zoning in the area (agricultural, residential, commercial, etc.), before acquisition and evidence of

compensation is provided to the NCAA. In addition, all appurtenant topographical data, including waterways, man-made structures, and significant contours, if available should be presented in the maps. It is recommended that an aerial photo be used as a background for this mapping.

9. Airport Property Map

This sheet serves as an inventory for existing and future land/property rights owned by the airport. The airport property map must show all parcels within the airport property as well as any future parcels to be purchased. Parcels must be clearly defined with parcel numbers and parcel flagging. Existing and ultimate property lines must be clearly defined.

10. Pavement Facilities Design Drawings sheet

The sheet should show detailed information of the geometry, dimensions, and components of the facilities (Runway, Taxiway and Apron)

11. Drainage Drawings

The sheet should provide detailed information of the type, dimensions, reinforcement, concrete grade, joints, etc. The drainage drawing should be super-imposed on the topographical map of the area to show all details on the drawing.

12. Proposed Runway Longitudinal Profile and Cross Section Drawings

The sheet(s) should provide(s) survey details of the proposed runway profile and cross section, this is to be done in three phases; the runway, and along the inner approach of both ends of the runway, this is before and should be repeated after completion of the construction and submitted to Authority on each occasion.

Note - the submission should include the survey data and the standard drawing

13. Airport Layout Plan (ALP) Submittal

The Aerodrome project proponent may submit an initial copy of the ultimate layout plan to the Authority for review and comments prior to the final submittal of the ALP. The ALP should be a final version and shall be in compliance with NCAA standards. If the submittal is incomplete or determined not to be acceptable, it will be returned by the Authority for completion and re-submittal. The Authority will not accept incomplete submittals.

After the incorporation of all requirements, the aerodrome owner shall submit a minimum of two signed copies of the ALP to the Authority. ALP's shall be approved and signed by the design engineer and submitted on A2 sized plan sheets.

14. The Authority's Approval

The ALP approval does not mean the commitment of the Authority for any project shown on the ALP, but for the aerodrome developers' compliance with regulatory requirements. An ALP approval does not constitute any environmental approval. A separate environmental review will be required.

APPENDIX 3: FORMAT OF THE DRAWING SHEETS

1. Airport Layout Drawing

- a. Sheet size – A2 paper
- b. Scale: 1:10,000
- c. North Direction Arrow
 - True and Magnetic North
 - Orient drawing so that north is to the top or left of the sheet
- d. Airport Reference Point (ARP) – latitude and longitude to the nearest second based on WGS-84
- e. Elevations - measured to the accuracy of one-half metre)

Physical features:

- Runway/shoulders;
 - Taxiway/exit links;
 - Runway end turn pad (if applicable);
 - Blast pads;
 - Runway strip;
 - Runway end safety area;
 - Apron;
 - Terminal/technical Building;
 - Fire Fighting Station;
 - Power house;
 - Meteorological weather observation Station;
 - Control Tower;
 - Car parking area;
 - Fuel farm
 - ILS Equipment shelter and Antennas Structure locations
 - CVOR, DVOR, NDB Equipment shelters and the Antenna structure (for Terminal) locations.
 - Surveillance RADAR Equipment shelter and Antenna Structure location.
 - Wind direction indicator.
 - Access/emergency roads, access gates and crash gates
- f. Building limit lines – Show on both sides of the runways and extend to the airport property line
 - g. Geometric design of the runway/taxiway/apron showing:
 - Dimensions – length and width within the outline of the runway
 - Orientation – Runway end numbers and true bearing to the nearest 0.01 degree
 - Markings
 - Lighting – airfield lights(where applicable)
 Runway Safety Areas - Strips and RESA
 - h. Geometric design of taxiway showing:

- Taxiway dimensions and separations from the runway centrelines, aircraft parking, and objects
- i. Title and Revision Blocks at right bottom corner of sheet showing:
 - Name and location of the airport;
 - Name of Consultant;
 - Date of drawing;
 - Drawing title;
 - Revision block;
 - Approval block.
- Standard legend;
- Airport facility and building list;

2. Airport Airspace Drawing

An aerodrome and obstacle Chart ICAO-Type A and Aerodrome Obstacle ICAO- Type B should be provided in accordance with Aeronautical Manual of Standards chapter 2, 3 and 4 requirements on a sheet size of A3 and A2 respectively at a scale of 1:10000 to 1:20000 depending on the details.

3. LAND USE DRAWING

- a. Include all land uses (industrial, residential, and so forth), on and off the airport, b. Sheet size – A0 paper
- c. Scale :1:10,000
- d. Title and revision blocks – Same as for Airport Layout drawing above
- e. Aerial base map
- f. Legend (symbols and land use descriptions)
- g. Identify public facilities (such as schools, parks, and others)

4. Airport Property Map

- a. Sheet size – Same as Airport Layout drawing;
- b. Scale – 1:10,000;
- c. Title and revision blocks – Same as mention above;
- d. Legend;
- e. Data Table;
 - A numbering or lettering system to identify tracts of land
 - The date the property was acquired
 - Type of ownership
- f. Show existing and future airport features (i.e., runways, Runway Protection Zones (RPZs), navigational aids etc.) that would indicate a future aeronautical need for airport property.

5. Pavement Design Drawings

- a. Geometric pavement Design Drawings Sheet size – A2 paper;
- b. Scale: 1:1000;
- c. Title and revision blocks- same as mentioned above;
- d. Legend;
- e. Sectional view details;
- f.
 - Runway;
 - Taxiway;
 - Apron;
 - Perimeter road;
 - Access/Emergency Road.

6. Longitudinal profile/Typical cross section

- a. Sheet size – A2 paper
- b. Scale; horizontal scale between (1:1000 -1:10000), while the vertical scale should be 10 time the horizontal scale adopted.
- c. Legend
- d. Drawn by:
- e. Checked by:
- f. Date:
- g. Drawing No:

7. Drainage Drawings

- a. Sheet size – A2 paper;
- b. Scale – 1:1000;
- c. Legend;
- d. Drawn by;
- e. Checked by;
- f. Date;
- g. Drawing No