Advisory Circular

[AC/AD – 05]

Guidance Materials for Coordination with Land Use Authorities for Obstacle Control

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CIVIL AVIATION AUTHORITY OF NEPAL

RECORD OF AMENDMENTS

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TABLE OF CONTENTS

FOREWORD

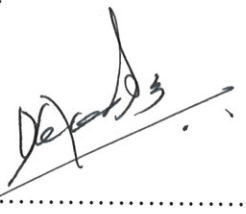
Nepal as a Contracting State to the Convention on International Civil Aviation has an obligation to the international community to ensure that civil aviation activities under its jurisdiction are carried out in strict compliance with the Standards and Recommended Practices contained in the nineteen Annexes to the Convention on International Civil Aviation in order to maintain the required aviation standards.

As per the Civil Aviation Authority of Nepal (CAAN), Airport Certificate Regulation - 2004 (First Amendment - 2016), the Aerodrome Manual requires to have a mechanism to protect Obstacle Limitation Surfaces (OLS) within and in the vicinity of any certified aerodrome.

The compatible land use planning is essential for relationship between airports and their community neighbours in relation to obstacle control. The planning concept may be relatively simple but the implementation requires careful study and requires co-ordinated planning with land use authorities. Coordination is required with land use authorities for the implementation of measures in the form of aviation system plans, legislation for compatible land uses, easements or land zoning. This Advisory Circular is basically for the development of mechanism for coordination with land use authorities and other state agencies to facilitate the implementation of the requirements for obstacle control outside the airport property boundary.

Users of this Advisory Circular are requested that the provisions of the ***Civil Aviation Authority Act - 1996 (2053 B.S.), CAAN Airport Certificate Regulations - 2004 (First Amendment - 2016) and Civil Aviation Regulation 2002, (Third Amendment 2017)*** rather than this Advisory Circular, determine the requirements of, and the obligations imposed by or under, the civil aviation legislation. Users should refer to the applicable provisions when any doubt arises.

This Authority may, without any prior notice, change the content of this Advisory Circular as appropriate.



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Director General

Civil Aviation Authority of Nepal

Babarmahal, Kathmandu, Nepal

February 2022

Chapter 1. Introduction

1.1 Purpose

The aim of this Advisory Circular is guidance for the development of a mechanism for coordination with land use authorities and other state agencies to facilitate the implementation of the requirement for obstacle control. Also, this guidance will give some insight into those airport operational factors which can affect land uses outside the airport property boundary.

1.2 Requirements

1.2.1 Obstacle Limitation Surface (OLS) Type A charts has to be prepared for aerodromes. The OLS Chart Type A should be prepared based at least upon the followings:

a) OLS Approach and Take-off path

b) Transition surface along both sides of the runway strip

c) Inner horizontal surface of the airport

d) Conical surface of the airport

e) Outer horizontal surface of the airport

For preparation of OLS Type A chart, longitudinal profile of the approach / take-off flight path area and flight path area has to be prepared. Flight path area is a quadrilateral area of a funnel type with 180-meter width at 60 meters from the end of runway, which increases to a maximum of 1800 meter width at distance of 10 Km. Area enclosed within the funnel with a longitudinal slope of 1.2 % from 60 meter of the runway end to 15 Km. The distance will be the flight path area. Objects (natural and manmade) that penetrate above this slope within the flight path area and beyond till 45 Km from the ARP (Airport Reference Point) will be considered as obstructions. These obstructions may be high rise structures, towers, masts, trees and land. As per CAR-4, Aerodrome Obstruction Chart Type A is to be prepared within an area of 45 Km radius from ARP and obstruction are identified above 120 meters from the airport elevation. Terrain and obstacle data above 120 meter needs to be collected. Objects penetrating above the horizontal, conical and transition surface will be considered as obstruction.

1.2.2 Surfaces described in the Procedures for Manual of Standards Instrument Flight Procedure Design has to be prepared for aerodromes. The PANS-OPS surfaces are intended for use by procedure designers for the construction of instrument flight procedures and for specifying minimum safe altitudes/heights for each segment of the procedure. The procedure and/or minimum heights may vary with aeroplane speed, the navigational aid being used, and in some cases the equipment fitted to the aeroplane.

1.3 Legislation, Standards and Technical References

1.3.1 Clause 7 (1) (c & d) of the Civil Aviation Authority of Nepal Act - 1996 empowers CAAN to prohibit, restrict or remove any structures and/or objects (mobile or

immobile) that may cause obstruction or hazard to aircraft operations.

1.3.2 Definitions and standards for the establishment of the OLS are contained in the Civil Aviation Requirements for Aerodromes (CAR - 14, Part 1), Aerodrome Design and Operations. The separate functions of the OLS and PANS-OPS surfaces are explained in the ICAO Airport Services Manual (DOC 9137) Part - 6: Control of Obstacles.

1.3.3 Details of the surfaces used to account for obstacles in instrument procedure designs are contained in the CAAN Manual of Standards Instrument Flight Procedure Design.

1.4 Responsibility

Responsibility for restriction and control of obstacles, must in practice, rest with the aerodrome operator. This includes the responsibility for controlling obstacles on aerodrome property and for arranging the removal or lowering of existing obstacles outside the aerodrome boundaries. And any development or proposed construction near aerodrome that is likely to create an obstacle, the aerodrome operator should coordinate with ASSD and land use authority. The aerodrome operator area of responsibility should at least include the followings:

a) Surveillance of surface to carry out flight

b) To control obstructions

c) To inspect the height of the physical structures

d) To inspect the development of the physical structures

e) To give information to the Civil Aviation Authority of Nepal

f) Name and role of the employees

Chapter 2. Land Use Planning

Land use planning is an important means to ensure that land adjacent to or in the immediate vicinity of the airport is consistent with activities and purposes compatible with normal airport operations, including aircraft landing and take-off.

2.1 Incompatible Land Use

Incompatible land use at or near airports may result in the creation of hazards to air navigation and reductions in airport utility resulting from obstructions to flight paths. For example, any land use that might allow tall structures, block the line of sight from the control tower to all parts of the airfield, inhibit pilot visibility (such as glaring lights, smoke, etc.), produce electronic aberrations in navigational guidance systems, or that would tend to attract birds would be considered an incompatible land use. For instance, under certain circumstances, an exposed landfill may attract birds. If open incineration is regularly permitted, it can also create a smoke hazard. Therefore, restrictions are necessary in the vicinity of airports and airways for the protection of aircraft in flight.

2.2 Compatible Land Use

Compatible land use is attained when the use of adjacent property neither adversely affects flight operations from the airport nor is itself adversely affected by such flight operations. Height of the infrastructures should be limited below aerodrome obstacle limitation surfaces. Residential housing and other land use near airports must remain compatible with airports and the airport approach/departure corridors.

Chapter 3. Mechanism for Coordination

Civil Aviation Authority of Nepal (CAAN) has the primary responsibility to establish criteria for the limitation of obstacles and to provide guidance and assistance to those directly concerned with control of obstacles. These criteria should take the form of the obstacle limitation surfaces and should be compatible with those in CAR-14, Part 1.

In addition to setting criteria, CAAN will coordinate with land use authorities when there is a plan to develop land in the vicinity of aerodrome so that no infringes takes place above the obstacle limitation surfaces in the interest of safety of aircraft operations (Aerodrome Operator will have a memorandum of understanding with land use authorities). In the vicinity of aerodrome, land use authorities coordinate with Aerodrome Operator for development of land use.

Detailed description of obstacles must be included in reports before zoning or planning of land in the vicinity of the aerodrome. The report or the survey must include:

a) obstacle identification or designation;
b) type of obstacle;
c) obstacle position, represented by geographical coordinates in degrees, minutes, seconds and tenths of seconds;
d) obstacle elevation and height to the nearest metre or foot;
e) obstacle marking, and type and colour of obstacle lighting (if any);
f) if appropriate, an indication that the list of obstacles is available in electronic form.

CAR-15 also has a provision for maintaining a digital obstacle data set. Section 5.3.3.4 of the CAR talks about digital obstacle data sets. Obstacle data sets shall contain the digital representation of the vertical and horizontal extent of obstacles. The obstacle data set can also be used for the coordination and communication between local land use authority and the aerodrome authority.

Chapter 4. Land Use Control

4.1 Enactment of Height Zoning Protection

The primary advantage of zoning is that it can promote compatible land use. Used within its limitations, zoning is the pre preferred method for controlling land use to achieve aerodrome-environs compatibility both for height and land use control. Zoning controls need careful tailoring in order to satisfy both the characteristics of the aerodrome and the special conditions affecting the land use. It is important for on-airport property and off-airport property to be appropriately zoned so that required airport development can occur.

4.2 Acquisition

Acquisition strategies for land use control and compatibility are most effective as they are used in preventative mode. As a preventative strategy, acquisition techniques are generally less controversial and costly to implement. It is important to note, however, that acquisition strategies can also be employed as "corrective' actions when incompatibilities already exist. Aerodrome operators should consider acquisition strategies in this section as both preventative and corrective actions.

4.3 Land Purchase

Land purchase by airport is the most positive of all forms of land use control, but it is usually the most expensive. It is preferable that land use authorities try to protect other land in the airport environs through comprehensive planning and zoning first, before outright purchasing, since the positive control method is less costly.

4.4 Easement

Easements may be used as an effective and permanent form of land use control. Easements are permanent, with title held by the purchaser until sold or released, and work equally will in zoned municipalities or nonzoned municipalities. Short of purchasing fee simple easements, property can be acquired by negotiation or condemnation. Easements permit the purchaser the use of another's property and property rights for the special purposes stated in the easement agreement. Limitations of easements are those which grant:

a) The right of flight over the land in question

b) The right to remove existing obstructions

c) A restriction against the establishment of future obstruction

d) Compensation to the owner for the side effects of aircraft operations over the owner's property.

One major advantage of easements is that they can be permanent, whereas zoning can be changed. Additionally, easements often may be acquired for a fraction of the total value associated with the simple purchase of the land and are, thus, less expensive. Easements can be an effective strategy for assuring compatible development around airports.

Chapter 5. Steps to Follow by the Aerodrome Operator

The aerodrome operator should coordinate with land use authorities for appropriate land use/zoning controls prior to the development of land near their airport. Adequate safeguards should be incorporated to prevent incompatible land uses or height obstructions from occurring in proximity to the boundaries of the airport. Adequate control can provide space for future airport expansion. Specific efforts that aerodrome operator can undertake to control and monitor land use compatibility around their airport are described below:

a) Assist surrounding local government authorities in understanding how the airport operates, the airport's flight patterns, and the type of aircraft operating at the airport. Also assist surrounding local government authorities in understanding how the airport benefits the local economy and community's health, welfare, and safety.

b) Stay involved because land use is fluid and subject to a public process that is constantly changing. By staying involved, the airport can influence the compatibility of land and related development surrounding the airport.

c) Be aware of land use actions proposed by the land use authority and all individual local government authorities in the airport environs.

d) Assist local government authorities in understanding Airport Certificate Regulation - 2004 (First Amendment - 2016) requirements and the special needs for protecting the safety and efficiency of airports operations.

e) Make sure the Airport layout Plan (ALP) is up to date so that it reflects current aircraft usage relating to the critical aircraft, all current on-airport facilities and desired development within the planning period, and current information on land use and land use controls.

f) Provide copies of the current Airport Layout Plan (ALP) to the land use authority.

g) Attend planning meetings on land use and development issues in the vicinity of the airport.

h) Invite land use authority officials and planners to be part of the airport advisory committee to keep them informed of the airport's plans and needs. By staying involved in local land use issues and local comprehensive plans, aerodrome operator can ensure that their airport's needs are brought to the attention of the land use authority who have the authority to control surrounding land use through zoning or other controls.