

GHANA CIVIL AVIATION (AERODROMES) DIRECTIVES



PART 27 - AERODROME SAFEGUARDING AND MAINTENANCE

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SUBPART A - GENERAL

27.1 DEFINITIONS

For the purpose of this part the following are definitions of terms used:

Aerodrome means 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.

Aircraft operation means the surface movement, take-off or landing of an aircraft.

Airport Master Plan means a comprehensive study of the airport and typically describes short-, medium-, and long-term plans for airport development. (ICAO Doc 9184 –Airport Planning Manual Part 1)

Airport or airstrip means any landing or take-off area intended for use by airplanes or other fixed wing type aircraft.

An aerodrome includes but is not limited to the following: airport, airstrip, heliport, helistop, vertiport, glider port, seaplane base, ultralight flight park, manned balloon launching facility, or other aircraft landing or take-off area.

Applicant means each person who proposes to a project or action that requires that the Director General is notified under this part.

Average daily departures means the average number of departures per day of aircraft computed on the basis of the busiest 3 consecutive calendar months of the immediately preceding 12 consecutive calendar months.

Determination means a decision taken by the Authority.

Director General means the Director General of the Ghana Civil Aviation Authority

Ground level at its site means the highest ground within a 600 m radius of the site:

Heliport means any landing or take-off area intended for use by helicopters or other rotary wing type aircraft capable of vertical take-off and landing profiles.

Movement area means that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s).

Navigable airspace means the airspace above the minimum altitudes of flight prescribed by the Directives and includes airspace needed to ensure safety in the take-off and landing of aircraft.

Obstacle limitation surface means airspace defined around an aerodrome that enables operations at the aerodrome to be conducted safely and that prevents the aerodrome from becoming unusable by the growth of obstacles around the aerodrome

Private use means available for use by the owner only or by the owner and other persons authorized by the owner.

Private use of public lands means that the landing and take-off area of the proposed aerodrome is publicly owned and the applicant is a non-government entity, regardless of whether that landing and take-off area is on land or on water.

Public use means available for use by the general public without a requirement for prior approval of the owner or operator.

Safety area means a defined area comprised of either a runway or taxiway and the surrounding surfaces that is prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from a runway or the unintentional departure from a taxiway.

Standards for aerodromes mean those standards set out in the Part 14 of the Aerodromes Directives.

Traffic pattern means the traffic flow that is prescribed for aircraft landing or taking off from an aerodrome, including departure and arrival procedures utilized within a 5-mile radius of the aerodrome for ingress, egress, and noise abatement.

Wildlife hazard means a potential for damaging aircraft collision with wildlife on or near an airport.

Wildlife means domestic animals out of the control of their owners, feral animals and birds.

27.2 ACRONYMS

The following acronyms are used in this Part:

ACN – Aircraft Classification Number

AGL – Above Ground Level

ALP – Airport Layout Plan

AMP – Airport Master Plan

ATC – Air Traffic Control

BRRI - Building and Road Research Institute

CAT – Category

EPA – Environmental Protection Agency

ft. – Feet

GCAA – Ghana Civil Aviation Authority

GCADs – Ghana Civil Aviation Directives

GHA - Ghana Highway Authority

IFR – Instrument Flight Rules

IMC – Instrument Meteorological Conditions

LOC – Localizer

LVO – Low Visibility Operations

LVP – Low Visibility Procedures

Kph – Kilometres per Hour

Km – Kilometre

m – Meter

MOS – Manual of Standards

MSL – Mean Sea Level

NCA – National Communications Authority

nm – Nautical Mile

NOTAM – Notice to Airmen

PCN – Pavement Classification Number

RVR – Runway Visibility Range

PBE – Protective Breathing Equipment

sm – Statute Miles

TFAIR - Telecommunications Facility Annual Information Report

VFR – Visual Flight Rules

VMC – Visual Meteorological Conditions

SUBPART B - CONSTRUCTION, ALTERATION, ACTIVATION AND DEACTIVATION OF AERODROMES

27.3 APPLICABILITY

- (1) This subpart prescribes rules for persons proposing to construct, alter, activate, or deactivate a civil or joint- use (civil/military) aerodrome or to alter the status or use of such an aerodrome.
- (2) This subpart does not apply to projects involving intermittent use of a site that is not an established aerodrome, which is used or intended to be used for less than one year and at which flight operations will be conducted only under VFR. For the purposes of this part, intermittent use of a site means:
 - (a) The site is used or is intended to be used for no more than 1 day in any 7 consecutive day period; and
 - (b) No more than 5 aircraft operations will be conducted in any one day at that site.

27.4 PROJECTS REQUIRING APPROVAL

- (1) A person who intends to do any of the following shall seek approval from the Director General in the manner prescribed in 27.5:
 - (a) Construct or otherwise establish a new aerodrome or activate an aerodrome.
 - (b) Construct, re-align, alter, or activate any runway or other aircraft landing or take-off

- area of an airport.
- (c) Deactivate, discontinue using, or abandon an aerodrome or any landing or take-off area of an aerodrome for a period of one year or more.
 - (d) Construct, realign, alter, activate, deactivate, abandon, or discontinue using any landing or take-off area of such an aerodrome, or a taxiway associated with a landing or take-off area on a public-use aerodrome.
 - (e) Change the status of an aerodrome from private use to public use or from public use to another status.
 - (f) Change any traffic pattern or traffic pattern altitude or direction.
 - (g) Change status from IFR to VFR or VFR to IFR.
 - (h) Aerodrome expansion
 - (i) Hangar construction,
 - (j) Decommission an established instrument approach procedure; and
 - (k) Any other project as shall be determined by the Authority.
- (2) Request for approval shall enable the Authority to identify:
- (a) Whether the use of the airspace associated with the proposal will be a hazard to other established airspace users;
 - (b) Any safety related considerations pertaining to persons and property on ground.

27.5 FORM OF APPLICATION

- (1) Applications shall be submitted on appropriate GCAA Form (Application for Landing Area), copies of which may be obtained from the Authority and shall be submitted at least—
- (a) In the cases prescribed in paragraphs (1)(a) through (1)(d) of 27.4, 180 working days in advance of the day that work is to begin; or
 - (b) In the cases prescribed in paragraphs (1) (f) through (1) (j) of 27.4, 180 working days in advance of the planned implementation date for modification.
- (2) Notwithstanding paragraph (a) of this section—
- (a) In an emergency involving essential public service, public health, or public safety or when the delay arising from the 180-working day advance notice requirement would result in an unreasonable hardship, an applicant may provide notice to the Authority by other expeditious means as soon as practicable in lieu of submitting appropriate GCAA Form. However, the applicant shall provide full notice, through the submission of GCAA Form, when otherwise requested or required by the Authority.

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- (b) Notice concerning the deactivation, discontinued use, or abandonment of an aerodrome, an aerodrome landing or take-off area, or associated taxiway shall be submitted by letter.
- (3) In completing the form, applicants must pay particular attention to the following:
- (a) Describe the proposed landing area by geodetic coordinates (WGS 84) as well as length and width;
 - (b) List visual flight rule (VFR) airports with 20 nautical miles;
 - (c) For heliports, list all VFR airports and heliports within 3 nautical miles and all IFR airports within 10 nautical miles;
 - (d) List all obstructions within 3 nautical miles of a VFR airport or a seaplane base, within 5 nautical miles of an IFR airport; or within 5,000 feet of a heliport;
 - (e) List schools, churches and residential communities within a 2 nautical mile radius for airports and within one nautical mile for heliports;
 - (f) List all waste disposal sites within a 5 nautical mile radius of the proposed landing area.
- (4) In addition to standard form required to be completed, submittals affecting an airport must include airport airspace drawing providing detailed drawing of the proposed landing area depicting latitude, longitude, length and width, and all obstructions (i.e. is terrain, buildings, high line wires, roads, railroads, towers, etc.) within the vicinity of the runway and its approaches as required in paragraph (c) of this section. The applicant must also, identify the section, township, distance and bearing the landing area is to be located in on the drawing.
- (5) In addition to standard form required to be completed, submittals affecting a heliport must include the following:
- (a) City Map identifying the exact location of the heliport in red.
 - (b) Heliport layout plan, drawn to scale showing key dimensions such as FATO, TLOF, safety area, approach/departure paths, property boundaries, close in obstructions, etc. or in the case of a hospital heliport, a hospital layout plan, depicting the landing pad in relation to buildings and other obstacles/structures in the vicinity of the landing area. Description of the size of the landing pad and the height of each structure and their distance from the landing pad.
 - (c) A heliport airspace drawing as described in paragraph (4) for airport submittals.
- (6) For existing aerodromes under proposed modifications, further detailed drawings with plot of locations of the facility with accuracy to the nearest second shall be included. Landing area alignments and associated taxiways shall be included.
- (7) Detailed drawings required in paragraph (6) shall be required also for proposed aerodromes after a determination of no objection to the proposed construction has been issued to the applicant.

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*Notes: Airport designs shall be in compliance with specifications set out in the GCADs Part 14).
Helipport designs shall be in compliance with specifications set out in the GCADs Part 30.*

27.6 AERONAUTICAL STUDY OF AERODROME PROPOSALS

- (1) On receipt of an application under section 27.5(1), the Director General shall conduct an aeronautical study of an aerodrome proposal.
- (2) An Application required in paragraph 27.4(a) serves as the basis for evaluating the effects of the proposed action on the safe and efficient use of airspace by aircraft and the safety of persons and property on the ground. In particular, the aeronautical study shall include but are not limited to:
 - (a) The effects the proposed action would have on existing or proposed traffic patterns of neighbouring airports or heliports,
 - (b) The effect the proposed action would have on the existing airspace structure and projected programs of the Authority.
 - (c) The effect the proposed action would have on the safety of persons and property on the ground within affected area.
 - (d) The effects that existing or proposed man-made objects (on file with the Authority) and natural objects within the affected area would have on the proposed action.
 - (e) The adjustment of other aviation requirements that may be needed to accommodate the proposal; and
 - (f) Possible revisions of the proposal that may be necessary to eliminate a hazardous or inefficient use of airspace.
- (3) In the conduct of an aeronautical study, the Director General shall consult with such persons, representative groups, and organisations as the Director General considers appropriate, and issue a determination to the applicant and advise those concerned of the Authority's determination.
- (4) The Aeronautical Studies and determination are focused solely on matters that affect the safety and efficiency of airspace use and the safety of persons and property on the ground. Authority shall not include matters relating to noise or other environmental issues or land use compatibility impacts, the effect on lifestyle or property values, or the effect on other services in the area such as roads.

27.7 DETERMINATIONS OF AERODROME PROPOSALS

- (1) On completion of the aeronautical study, the Director General shall issue to the applicant, appropriate local authorities, and other interested persons an aerodrome determination which shall be one of the following:
 - (a) No objection. A no objection determination shall be made when the Director General is satisfied that the proposed action will not adversely affect the safe and efficient use of the airspace by aircraft nor the safety of persons or property on the ground:

- (b) Conditional. A conditional determination shall be made when the Director General identifies objectionable aspects of a proposed project or action and specify the conditions which must be met and sustained to preclude an objectionable determination.
- (c) Declined. A declined determination shall be made when the Director General identifies objectionable aspects of a proposed project or action. The Director General may provide reasons for issuing such a determination.

Note: Determinations communicate either the Authority’s approval of the site or denial. A determination does not communicate approval to start construction.

- (2) A determination does not relieve the Applicant of responsibility for compliance with any other local law or State legislation.
- (3) Any determination made under this Part of the Directives does not constitute a commitment of State funds and does not indicate that the proposed development is environmentally acceptable in accordance with applicable environmental laws.

Note: An environmental finding is a prerequisite to any major airport development project under EPA laws. Applicants for aerodrome projects are advised to notify the appropriate state environmental authority separately for prior written approval before undertaking proposed airport development.

- (4) Except for a declined determination, each determination will contain a determination-void date to facilitate efficient planning of the use of the navigable airspace.
- (5) All work or action for which notice is required by this subpart shall be completed by the determination void date as specified in paragraph (4). Unless otherwise extended, revised, or terminated, a determination by the Authority becomes invalid on the day specified as the determination void date. Any interested person may, at least 15 days prior to the determination void date, petition the Authority to:
 - (a) Revise the determination based on new facts that change the basis on which it was made; or
 - (b) Extend the determination void date if there are valid reasons for not completing the action by the void date. Determinations will be furnished to the applicant, aviation officials, and, when appropriate other interested persons.

27.8 AERODROME DESIGN AND CONSTRUCTION

- (1) Once a determination of approval has been issued by the Authority on a proposed site, the applicant shall submit detailed construction drawings in the form of Airport Layout Plans (ALP) or Airport Master Plans (AMP) as may be required by the Authority for approval.

Note: See GCAA publications for guidance on the preparation of AMP or ALP sets.

- (2) The design of an aerodrome shall provide aerodrome facilities that are suitable for the aircraft intended to operate at the aerodrome.
- (3) Aerodrome designs shall be based on the critical aircraft characteristics for which the facility is to be provided.

- (4) Architectural and infrastructure-related requirements for the optimum implementation of international civil aviation security measures shall be integrated into the design and construction of new facilities and alterations to existing facilities at an aerodrome.
- (5) The design of aerodromes shall take into account land-use and environmental control measures and shall satisfy the requirements of other regulatory agencies.
- (6) Human factors shall be considered in all aspect of the aerodrome design.
- (7) Specifications for the design of airports and heliports are contained in the Part 14 and 30 of the GCADs respectively.
- (8) An applicant shall not commence construction or alteration without approval from the Authority.
- (9) During construction, the Authority may request for material and construction data from the applicant. Information on cored samples and laboratory analysis of material properties should be certified by laboratories of competent institutions such as the Ghana Highway Authority (GHA), the Building and Road Research Institute (BRRI) of CSIR and other institutions acceptable to the Authority.
- (10) Aerodrome Operators shall maintain an up-to-date Airport Master Plan that ensures the safety, utility and efficiency of the airport.
- (11) Depending on the type and size of the airport, ALP's shall be updated at least every 10 years. If an ALP is less than 10 years old and there are significant changes in proposed airport expansion not shown on the current ALP, the preparation of a new ALP will be required.
- (12) A new AMP update shall be required where;
 - (a) an AMP is more than 10 years old and the airport is proposing a project not shown on the ALP or
 - (b) the current ALP does not meet the existing standards.

27.9 NOTICE OF COMPLETION

- (1) Within 15 days of completion of any aerodrome project covered by this part, the applicant shall notify the Authority by submission of the approved form (Aerodrome Master Record).
- (2) Upon submission of the Aerodrome Master Record, the applicant shall not conduct and or authorise any flight operations at the aerodrome until inspections are conducted and a final approval is granted by the Authority.
- (3) Prior to approval, the operator shall demonstrate proof of competence to the Authority that the aerodrome or facility shall be operated safely.

- (4) The applicant shall not operate the aerodrome or navigational facility until the Authority has duly given approval.

SUBPART C – NOTICE OF OTHER CONSTRUCTION, ALTERATION AND ACTIVITIES THAT MAY AFFECT AERODROMES

27.10 APPLICABILITY

- (1) A person proposing any kind of construction or alteration described in paragraph 27.11 (1) shall obtain prior approval of the Director General by submitting an Application, as specified in section 27.15. The Application shall specify the locations, coordinates (in WGS 84), heights, and the natural ground level above mean sea level of the construction or alteration for which approval is required. It also requires supplemental notices 30 working days before the start, and upon the completion of, certain construction or alteration that was the subject of an application under paragraph 27.11(1).
- (2) Applications received under this subpart provide a basis for:
- (a) Evaluating the effect of the construction or alteration on operational procedures and proposed operational procedure;
 - (b) Determining the possible hazardous effect of the proposed construction or alteration on air navigation;
 - (c) Determining the requirements for marking and lighting of constructions or alterations, in accordance with GCADs Part 14;
 - (d) Determining other appropriate measures to be applied for continued safety of air navigation; and
 - (e) Charting and other notification to airmen (NOTAM) of the construction or alteration.

27.11 REQUIREMENTS FOR CONSTRUCTION OR ALTERATIONS

- (1) Except as provided in paragraph 27.18, a person who proposes the construction or alteration of a structure, shall apply to the Director General in the form and manner prescribed in paragraph 27.15 if:
- (a) Any construction or alteration shall result in an overall height of the structure above ground level as follows:
 - (i) more than 10 meters at its site and within a 5000 meters radius of an existing or proposed aerodrome; or
 - (ii) 46 meters or more at its site beyond 10nm radius of an existing or proposed aerodrome.

Note: 1nm=6076ft, or 1853m

- (b) Any construction or alteration of greater height than any obstacle limitation surface in accordance with the criteria specified in the GCADs Part 14.

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- (c) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward by 5 meters for any highway where over crossings are designed for a minimum of 5 meters vertical distance, 4 meters for any other public roadway, 3 meters or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 7 meters for a railroad and for any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of subparagraph (1) (a) or (b) of this section.
- (d) The object, construction or alteration would be in an instrument approach area.
- (e) The object would be on designated low-level flying routes or close to major highways
- (f) The object is located within an IFR en-route obstacle clearance area, including evaluated routes on en- route and area charts but excluding charted routes as published in the AIP instrument flight guide, and would necessitate an increase in an existing or planned minimum obstacle clearance altitude; or
- (g) The object exceeds the general tree height in the area by 18 m and is located in an area of low level aerial activity or other low flying activity, or in a low flying zone or low level route.
- (h) Any object, construction or alteration would be on any of the following airports;
 - (i) an airport that is available for public use.
 - (ii) an airport under construction, which is the subject of an application or proposal on file with the Authority at the time of application.
- (2) A person who proposes construction or alteration that is the subject of an application under paragraph (1) of this section, and is advised by the Authority that a supplemental notice is required, shall submit that notice on a prescribed form, to be received by the Authority at least 30 working days before the start of the construction or alteration.
- (3) A person who undertakes construction or alteration that is the subject of an Application under paragraph (1) of this section shall, within five (5) days after that construction or alteration reaches its greatest height submit a supplemental notice to the Authority, or upon request of the Authority that the submission of the form is required.
- (4) Any person who fails to notify the Authority of the proposed construction or alteration commits an offence and shall be liable to sanctions as specified in Appendix A.
- (5) The filing of an Application with the Authority does not relieve the Applicant from compliance with laws, ordinances or regulations of any other governmental entity.

27.12 NOTICE OF USE OF A STRUCTURE DISCHARGING EFFLUX, A LIGHT OR A LASER.

- (1) A person proposing to use a structure which may discharge efflux shall apply for approval from the Director - General in accordance with section 27.15 if:

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- (a) the structure may discharge efflux at a velocity in excess of 4.3m per second through an obstacle limitation surface of an aerodrome; or
 - (b) the structure may discharge efflux at a velocity in excess of 4.3 m per second higher than 60 m above ground level.
- (2) A person proposing to operate a light or laser within 18500 meters of an airport reference point and below 3000 meters Above Ground Level (AGL) shall apply for approval from the Director General in accordance with paragraph 27.15 if:
- (a) its glare may affect a pilot's vision or the light or laser is liable to endanger aircraft; or
 - (b) the laser would produce exposures in navigable airspace exceeding the maximum permissible exposure defined for that Laser by appropriate State organisations; or
 - (c) it is likely to endanger aircraft by being mistaken for—
 - (i) a light or part of a system of lights established or approved for display at or near an aerodrome; or
 - (ii) a light marking a hazard in navigable airspace.
- (3) The use of lasers is an obstruction to air navigation if their use will produce exposures in navigable airspace exceeding the maximum permissible exposure defined for that zone.

27.13 NOTICE OF USE OF WEAPONS

- (1) The approval of the Director General shall be required in accordance with section 27.15 where a person proposes to use a weapon that fires or launches a projectile that has a trajectory higher than:
- (a) 45 m if within 10000m from the aerodrome reference point; or
 - (b) 20m if more than 15000m from the aerodrome reference point.
- (2) Any appropriate authority proposing to allow the use of weapons that will fire or launch a projectile that will have a trajectory higher than 45 m within 15000m from aerodrome reference point shall notify the Director General of the proposal.
- (3) The use of weapons is an obstruction to air navigation if an analysis discloses that their use will constitute a hazard in navigable airspace.

27.14 NOTICE OF USE OF PYROTECHNICS

- (1) The approval of the Director General shall be required in accordance with section 27.15 where a person proposes to stage a pyrotechnics display that will involve the firing or launching of a projectile that will have a trajectory higher than:
- (a) 45 m if within 10000m from the aerodrome reference point; or
 - (b) 120m if more than 15000m from the aerodrome reference point.

- (2) Pyrotechnics displays that will involve the firing or launching of a projectile that will have a trajectory higher than 60 m are prohibited within 15000m from an aerodrome reference point.
- (3) The use of pyrotechnics is an obstruction to air navigation if an analysis discloses that their use will constitute a hazard in navigable airspace.

27.15 FORM AND TIME OF NOTICE AND NOTICE REQUIREMENTS

- (1) Each person required to notify the Director General under section 27.11 shall complete the appropriate application form and submit it to the Director General at least 30 working days prior to the proposed date of commencement of construction, alteration, or use. However, a notice relating to proposed construction or alteration that is subject to the licensing requirements of the National Communications Authority (NCA) or any other appropriate authority may be sent to the Authority at the same time the application for construction is filed with the NCA or other appropriate authority. The notice may be filed with the Authority prior to filing with the NCA or other appropriate authority.
- (2) In the case of an emergency involving essential public services, public health, or public safety that requires immediate construction or alteration of a structure, or use of a structure, lights, lasers, weapons, or pyrotechnics, the 30-working day requirement in paragraph (1) of this section does not apply and the notice may be sent by telephone, telefax, or other expeditious means, with the appropriate form submitted to the Director General within 5 days thereafter.
- (3) Notwithstanding the provisions of (2) above, where the construction or alteration involves a mast, tower or some other structure as may be specified by the Authority, prior approval shall be obtained from the Director – General at least 24 hours before the construction or alteration commences.
- (4) A person proposing to use lights, lasers, weapons, or pyrotechnics under Sections 27.12, 27.13 and 27.14 shall complete the appropriate GCAA Form and submit it to the Director General at least 14 working days prior to the proposed commencement of the use.
- (5) A person who is required to notify the Director General by paragraph (2) or (5) of this Section, or both, shall send a notice of progress of construction or alteration, on the form prescribed for this purpose to the Authority.
- (6) A person who is required to notify the Director General by sections 27.11, 27.12, 27.13 or 27.14 shall send a notice of proposed use on the form prescribed for this purpose to the Authority.

27.16 ADDITIONAL NOTICE REQUIREMENTS

- (1) An Applicant or person who is required to give notice under 27.11, 27.12, 27.13 and 27.14 shall, if and when required by the Director General, notify the Director General in writing of the actual commencement date of the construction, alteration or use as applicable.
- (2) A person who is required to give notice under 27.11(c) shall notify the Director General using the appropriate GCAA Form:

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- (a) That the construction or alteration has reached 150 ft. (46 m) in height above the ground level at its site, within 5 days of it doing so; and
 - (b) That the construction or alteration has reached its greatest height, within 5 days of it doing so.
- (3) The notice required by paragraph (2), when the structure reaches its greatest height, shall include a registered surveyor's determination of structure height and position and proof of compliance with marking and lighting requirements as determined by the Director General.
- (4) A person who abandons a construction or alteration project that is the subject of an Application under this Part shall notify the Director General in writing within 5 days after the project is abandoned.
- (5) A person who dismantles removes or allows the destruction of a structure that is the subject of an Application or Approval under this Part shall immediately notify the Director General in writing after the construction or alteration is removed, dismantled or destroyed.

27.17 ACKNOWLEDGMENT AND DETERMINATION

- (1) The Authority shall acknowledge in writing the receipt of each Application or notice submitted under Section 27.11(1), 27.12, 27.13 and 27.14.
- (2) If the construction or alteration proposed in an Application or notice is one for which lighting or marking is prescribed, the acknowledgment shall contain a statement to that effect and information on how the structure should be marked and lighted in accordance with the criteria established in the GCADs Part 14.1.
- (3) Subject to a determination made under section 27.23, the Authority shall issue a Determination in writing which states that an evaluation of the proposed construction or alteration has resulted in a determination that the construction or alteration:
 - (a) Would not exceed any specification of Subparts C and D, and would not be a hazard to air navigation; or
 - (b) Would exceed a specification of Subpart C and D, but would not be a hazard to air navigation; or
 - (c) Would exceed a specification of Subpart C and D, and would be a hazard to air navigation; or
 - (d) Would exceed a specification of Subpart C and D and requires further aeronautical study, subject to payment of a prescribed aeronautical study fee to determine whether it would be a hazard to air navigation;
 - (e) An Applicant may request, within 30 days of receiving a Determination under 4 above, that further study be conducted subject to the payment of the prescribed fee. Pending completion of any further study, it is presumed the construction or alteration would be a hazard to air navigation.

27.18 CONSTRUCTION OR ALTERATION NOT REQUIRING NOTICE UNDER THIS PART

The Director-Generals approval is not required for any of the following construction or alteration:

- (a) Any antennal structure of 30 ft. (10 m) or less in height outside 50000 ft. (15000 m) of the airport.
- (b) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, of a type approved by the Director General, the location and height of which is fixed by its functional purpose.
- (c) Any construction or alteration for which approval is required by any other Ghana Civil Aviation Directive.

27.19 USE OF LIGHTS

- (1) A non-aeronautical ground light near an aerodrome which might endanger the safety of aircraft shall be extinguished, screened or otherwise modified so as to eliminate the source of danger.
- (2) To protect the safety of aircraft against the hazardous effects of laser emitters, the following protected Laser beam zones, shall be established around aerodromes in accordance with the GCADs Part 14 and 30:
 - (a) Laser Beam Free Flight Zone (LFFZ).
 - (b) Laser Beam Critical Flight Zone (LCFZ).
 - (c) Laser Beam Sensitive Flight Zone (LSFZ).
- (3) A non-aeronautical ground light which, by reason of its intensity, configuration or colour, might be mistaken for aeronautical ground lights shall be extinguished, screened or otherwise modified so as to eliminate such a possibility.

Note: Areas within which a non-aeronautical ground light visible from the air may cause confusion is described in the PART 14.

27.20 ESTABLISHMENT OF OBSTACLE LIMITATION SURFACES

- (1) Aerodrome operators shall establish obstacle limitation surfaces for the aerodrome. Specifications for civil airport and heliport obstacle limitation surfaces are contained in the Parts 14 and 30 of the GCADs respectively.
- (2) Airport obstacle limitation surfaces are:
 - (a) The conical surface.
 - (b) The inner horizontal surface.
 - (c) The inner approach surface.

- (d) The approach surface.
 - (e) The transitional surface.
 - (f) The inner transitional surface.
 - (g) The balked landing surface.
 - (h) The outer horizontal surface.
 - (i) The take-off climb surface.
- (3) Heliport obstacle limitation surfaces are:
- (a) The primary surface.
 - (b) The approach surface.
 - (c) The transitional surfaces

27.21 SHIELDING OF OBSTACLES.

- (1) Shielding is employed when a substantial and permanent object or natural terrain already penetrates an obstacle limitation surface and a proposed object that will penetrate the obstacle limitation surface within 300m is of equal or lesser height than the existing structure.
- (2) The Authority shall determine where shielding shall be applied.
- (3) Acceptance by the Authority of obstacle limitation surface penetrations using the shielding principle will always be subject to scrutiny of the operational implications. Existing obstacles will be regarded as shields only when there is no prospect of their removal or destruction.
- (4) An object that is determined by the Director General to be a hazard in navigable airspace may not be required to be marked or lighted if the Director General considers the object to be shielded.
- (5) An object that is a lower height than another object:
 - (a) Already considered to be a hazard in navigable airspace; and
 - (b) That is marked by standard obstacle marking or lighting, may be considered to be shielded by the other object.
- (6) An aeronautical study may be required to determine whether an object that penetrates an obstacle limitation surface is shielded.
- (7) A shielding object shall be permanent.

- (8) An object may be classed as permanent only if, when taking the longest view possible, there is no prospect of removal being practicable, possible, or justifiable, regardless of how the pattern, type, or density of air operations might change.
- (9) Where the obstacle lies outside of the areas referred to in paragraph (5) it may be considered shielded if located within 300 m of the shielding object.

27.22 AERONAUTICAL STUDY OF EFFECT OF PROPOSED CONSTRUCTION ON NAVIGABLE AIRSPACE

- (1) The Authority shall conduct an aeronautical study to determine the impact of the following on aeronautical operations, procedures, and the safety of flight:
 - (a) a proposed structure;
 - (b) an existing structure that has not yet been evaluated by the Authority; or
 - (c) an alteration of an existing structure.
- (2) The Aeronautical studies shall evaluate:
 - (a) The impact on present and future arrival, departure, and en route procedures for aircraft operating under visual flight rules and any possible changes in those operations and procedures that would eliminate or alleviate the conflicting demands;
 - (b) The impact on present and future arrival, departure, and en route procedures for aircraft operating under instrument flight rules and any possible changes in those operations and procedures that would eliminate or alleviate the conflicting demands;
 - (c) The impact on existing and planned public use aerodromes;
 - (d) Airport traffic capacity of existing public use aerodrome and public use aerodrome development plans received before the issuance of the final determination;
 - (e) Minimum obstacle clearance altitudes, minimum instrument flight rules altitudes, approved or planned instrument approach procedures, and departure procedures;
 - (f) The potential effect on operations of ATC radar, direction finders, ATC tower line-of-sight visibility, and physical or electromagnetic effects on air navigation, communication facilities, and other surveillance systems;
 - (g) The aeronautical effects resulting from the cumulative impact of a proposed construction or alteration of a structure when combined with the effects of other existing or proposed structures and any possible changes in the proposal that would eliminate or alleviate the conflicting demands.
 - (h) Such other factors as shall be determined by the Authority
- (3) An aeronautical study shall be conducted by the Authority:

- (a) Upon the request of an Applicant seeking approval for any construction or alteration for which an Application is submitted under Subpart C of this part, unless that construction or alteration would be located within an antenna farm area established in accordance with section 27.28; or
 - (b) Whenever the Director General determines it appropriate.
- (4) The Authority may terminate the study if an Applicant withdraws its application for the proposed construction or alteration or revises it to such an extent that it is no longer considered as an obstruction, or if no further aeronautical study is necessary.

27.23 DETERMINATIONS UNDER THIS SUBPART

- (1) The Authority will issue a determination stating whether or not the proposed construction or alteration would be a hazard to air navigation, and will advise all known interested persons.
- (2) The Authority shall make determinations based on the findings of an aeronautical study and will identify the following:
 - (a) The effects on VFR/IFR aeronautical departure/arrival operations, air traffic procedures, minimum flight altitudes, and existing, planned, or airport proposals listed in Subpart B of which the Authority has received actual notice prior to issuance of a final determination.
 - (b) The extent of the physical and/or electromagnetic effect on the operation of existing or proposed air navigation facilities, communication aids, or surveillance systems.
- (3) A determination as to whether the proposed construction or alteration would be a hazard to air navigation shall be issued stating one of the following:
 - (a) A No Objection or a Determination of No Hazard to Air Navigation will be issued when the aeronautical study concludes that the proposed construction or alteration will not exceed an obstruction standard and would not have a substantial aeronautical impact to air navigation
 - (b) A No Objection or a Determination of No Hazard to Air Navigation will be issued when the aeronautical study concludes that the proposed construction or alteration will exceed an obstruction standard but would not have a substantial aeronautical impact to air navigation
 - (c) A Determination of No Hazard to Air Navigation subject to certain stated conditions that may include:
 - (i) Conditional provisions of a Determination.
 - (ii) Limitations necessary to minimize potential problems, such as the use of temporary construction equipment.
 - (iii) Supplemental notice requirements, when required.
 - (iv) Marking and lighting recommendations, as appropriate.

- (d) A Determination of Hazard to Air Navigation will be issued when the aeronautical study concludes that the proposed construction or alteration will exceed an obstruction standard and would have a substantial aeronautical impact.
- (e) The Authority shall only issue a safety permit to Applicants when a determination of “No Hazard to Air Navigation” has been made.
- (f) A determination issued under this subpart shall be final unless a petition for a review is received by the Authority within 30 days of issuance. The determination will not become final till a final decision is taken on the petition.
- (g) Unless a determination void date is specified or otherwise extended, revised, or terminated, each final determination of no hazard made under this subpart expires 18 months after its effective date, regardless of whether the proposed construction or alteration has been commenced, or on the date the proposed construction or alteration is abandoned, whichever is earlier.
- (h) A Determination that has become final regarding the use of balloons, lights, lasers, weapons, or pyrotechnics, expires upon completion of use as indicated on the notice or application form or the day after the date of use granted by the Director General, whichever is earlier.

27.24 PETITIONS, EXTENSIONS, TERMINATIONS, REVISIONS AND CORRECTIONS

- (1) A Petition for the review of a Determination shall be submitted within 30 days of the issuance of the Determination to the Director – General by:
 - (a) The Applicant for Approval for any proposed construction or alteration
 - (b) any person who stated a substantial aeronautical objection to it in an aeronautical study, or
 - (c) any person who has a substantial aeronautical objection to it but was not given an opportunity to state it,
- (2) The petition must contain a full statement of the aeronautical basis upon which it is made.
- (3) The Director General shall examine each petition and decide whether a review is required. Any review shall be based on written materials, including a report of the previous aeronautical study, briefs, and related submissions by any interested party, and other relevant facts, with the Director General affirming, revising, or reversing the determination.
- (4) In any case including a case of a determination of no hazard, where the proposed construction or alteration has not been commenced during the applicable period by actual structural work, such as the laying of a foundation, but not including excavation, any interested person may, at least 15 days before the date the final determination expires, petition the Director General to:
 - (a) Revise the determination based on new facts that change the basis on which it was made; or

- (b) Extend its effective period.
- (5) In any case including a final determination made under this subpart or subpart B of this Part and which relates to a proposed construction or alteration that may not be commenced unless an appropriate authority issues an appropriate construction permit, the effective period of each final determination includes:
 - (a) The time required to apply to such appropriate authority for a construction permit, but not more than 180 days after the effective date of the determination; and
 - (b) The time necessary for such appropriate authority to process the application except in a case where the authority determines a shorter effective period is required by the circumstances.
- (6) If such appropriate authority issues a construction permit, the final determination is effective until the date prescribed for completion of the construction. If such appropriate authority refuses to issue a construction permit, the final determination expires on the date of the refusal.

27.25 ANNUAL INFORMATION REPORT

- (1) As of January 2009, owners of any new or existing telecommunication mast shall submit annually on or before January 31 of each year, to the Authority, a TFAIR. The TFAIR shall include the mast owner's name(s), address(s), phone number(s), contact person(s) and annual review fee.
- (2) The mast owner shall supply the mast height and current occupancy. The mast owner shall certify that the mast is still being used. This information shall be submitted on a signed form, designated for such use, and shall become evidence of compliance.

27.26 ANNUAL INFORMATION REPORT FEE

Following the issuance of an airspace safety permit, on yearly basis every year thereafter the owner of the mast shall submit, on or before January 31 of each year, to the Authority an annual review fee as prescribed by the Authority, for each site.

27.27 COMPLIANCE

- (1) A person required by 27.11, 27.12, 27.13, or 27.14 to apply or provide notice to the Director-General shall comply with any requirement, condition, or limitation imposed in the issuance of a determination.
- (2) The following shall constitute grounds for revocation of safety permits issued under 27.23 (4):
 - (a) The owner of telecommunication mast site, service provider and/or mast owner fails to comply with the requirements of the Permit;
 - (b) The Permit Holder has failed to comply with the conditions of approval imposed;
 - (c) The facility has not been properly maintained;
 - (d) And any other grounds as shall be determined by the Authority to be in the public

interest.

- (3) Any antenna or mast that is not operated for a continuous period of twelve (12) months shall be considered abandoned. In such circumstances, the following shall apply:
 - (a) The owner of such site, antenna or mast and the property owner upon which the site is located shall remove said antenna and/or mast within thirty (30) days of receipt of notice from the Authority of such abandonment. If satisfactory removal does not occur within the specified thirty (30) days, the Authority may order removal at cost.
 - (b) The Holder of a Permit for a telecommunications mast shall notify the Authority within 30 days of cessation of use of the mast.

27.28 ESTABLISHMENT OF ANTENNA FARM AREAS.

- (1) Antenna farm areas in which antenna structures may be grouped to localize their effect on the use of navigable airspace may be established.
- (2) It is the policy of the Authority to encourage the use of antenna farms and the single structure-multiple antenna concept for radio and television masts whenever possible. In considering proposals for establishing antenna farm areas, the Authority shall consider as far as possible the revision of aeronautical procedures and operations to accommodate antenna structures that will fulfil broadcasting requirements.

SUBPART D – SAFEGUARDING OF AERODROMES

27.29 MONITORING OF AIRSPACE

- (1) An operator of an aerodrome shall monitor the airspace around the aerodrome for infringement of the obstacle limitation surfaces by:
 - (a) any object, building or structure; or
 - (b) any gaseous efflux having a velocity exceeding 4.3 metres per second.
- (2) The monitoring shall be in accordance with the standards set out in GCADs Part 14.

27.30 NOTICE OF OBSTACLES

- (1) If an operator becomes aware of any development or proposed construction near an aerodrome that is likely to create an obstacle, the operator shall:
 - (a) inform the NOTAM Office immediately; and
 - (b) give the NOTAM Office details of:
 - (i) the height and location of the obstacle; and
 - (ii) amended declared distances and gradients, if applicable.

27.31 RESTRICTION AND REMOVAL OF OBSTACLES.

- (1) Objects which do not penetrate an approach surface to a new runway or a proposed

runway extension but which are determined by the Authority to nevertheless adversely affect the optimum performance of visual or non-visual aids shall be removed.

- (2) Anything which may, in the opinion of the Authority endanger aircraft on the movement area shall be removed.
- (3) Special restrictions shall be applied to elevated wires and their supports. Where no other object penetrates a given obstacle limitation surface, overhead wires and their supports shall not penetrate a surface passing through the top of the highest existing object and parallel to the established surface for a distance of 1500 meters from the runway threshold. The shielding criteria in Section 27.21 shall not apply to overhead wires.

27.32 OBJECTS OUTSIDE THE OBSTACLE LIMITATION SURFACES

- (1) Where a proposed construction beyond the lateral limits of the obstacle limitation surfaces extends above a height established by the Authority, the Authority shall be requested to conduct an aeronautical study of the effect of such construction on the operation of aeroplanes.
- (2) In areas beyond the limits of the obstacle limitation surfaces, at least those objects which extend to a height of 150 m or more above ground elevation shall be regarded as obstacles, unless a special aeronautical study indicates that they do not constitute a hazard to aeroplanes.
- (3) Anything which may, in the opinion of the Authority after aeronautical study, endanger aeroplanes on the movement area or in the air within the limits of the inner horizontal and conical surfaces shall be regarded as an obstacle and shall be removed.

Note - In certain circumstances, objects that do not project above any of the obstacle limitation surfaces and zones enumerated in this part may constitute a hazard to aeroplanes as, for example, where there are one or more isolated objects in the vicinity of an aerodrome.

27.33 AIRPORT ZONES

- (1) Airport zones which include all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces, and conical surfaces as they apply to Airport Imaginary Surface Plan shall be created and established by the aerodrome operator in co-ordination with the appropriate zoning authorities. Approved copies of the Zoning Plan shall be made available to the Authority, the local development authorities and stakeholders of the city where the airport is located.
- (2) The various zones to be established are the Approach Zone, Transitional Zone, Horizontal Zone, Conical Zone, Clear Zones and Accident Potential Zones.
- (3) The design of aerodromes shall take into account, land-use and environmental control measures.

27.34 AIRPORT ZONE HEIGHT LIMITATIONS

- (1) Except as otherwise provided in the zoning plan, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone to a height in excess of the applicable height limit therein established for such zone.

- (2) Zoning height limitations, as approved by appropriate zoning authorities shall be equal to or may be more restrictive than specifications of obstacle limitation surfaces prescribed in the GCADs Part 14.
- (3) Zoning height shall not be altered to exceed the specifications of obstacle limitation surfaces prescribed in the Part 14 of the GCADs without recourse to the Authority.

27.35 CLEAR ZONES

Every aerodrome shall have a clear zone of not closer than a distance of 500 m from the runway strip. Clear zones shall not be used for any other purpose than for the erection of Air navigation equipment. Runway clear zones are areas on the ground, located at the ends of each runway. They possess a high potential for accidents, and their use is restricted to be compatible with aircraft operations. Runway clear zones are required for the runway and should be owned or protected by the operator

27.36 ACCIDENT POTENTIAL ZONES

- (1) Every aerodrome shall have an accident potential zone. Uses within accident potential zones shall be controlled to ensure safety of aircraft and persons and property on the ground. It is required that the appropriate zoning authorities include this area as part of airport easement.
- (2) The Airport operator shall declare an accident potential zones of 900 m from the runway strip for the uses that are permitted.

27.37 PROTECTION OF COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT & SIGNALS

- (1) Adequate land clearance shall be maintained for the proper functioning of Communication, Navigation and Surveillance equipment.
- (2) To prevent electromagnetic interference and physical obstruction to line-of-sight, no encroachment shall be permitted beyond distances specified in the installation's manual.
- (3) No person shall build within a 1000m radius from proposed or existing sites for installation of aviation communication, navigation and surveillance equipment without an aeronautical study and approval from the Authority.

27.38 NON-CONFORMING USES

No use may be made of land or water within any zone established by the airport in such a manner as to:

- (a) create electrical interference with navigation signals or radio communication between the airport and aircraft,
- (b) make it difficult for pilots to distinguish between airport lights and others,
- (c) result in glare in the eyes of pilots using the airport,
- (d) impair visibility in the vicinity of the airport,

- (e) create bird strike hazards, or
- (f) otherwise in any way endanger or interfere with the landing, take-off, or manoeuvring of aircraft intending to use the airport.

27.39 VARIANCES

- (1) Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property not in accordance with the restrictions prescribed in the zoning plan, shall apply to the Authority for the necessary clearance before seeking a variance.
- (2) Such variances may be allowed where it is duly found that a literal application or enforcement of the restrictions will result in unnecessary hardship and, a relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, and will do substantial justice.

27.40 MARKING AND LIGHTING OBJECTS

- (1) The following objects shall be lighted in periods of low visibility
 - (a) any structure which is more than 10m above an aerodrome and located within 2km from the closest edge of a runway or helipad;
 - (b) any structure which is more than 20m above an aerodrome and is located within 6km from the closest edge of a runway or helipad;
 - (c) any structure which is more than 30m above an aerodrome and is located within 10km from the closest edge of a runway or helipad;
 - (d) any structure which is more than 45m above ground at its location
- (2) The owner of any existing non-conforming structure or tree shall install, operate, and maintain such markers and lights as shall be deemed necessary by an aerodrome operator to indicate to the operators of aircraft in the vicinity of the airport, the presence of such airport obstruction.

SUBPART E – AERODROME OPERATIONS AND MAINTENANCE

27.41 COMPETENCY OF AERODROME PERSONNEL

- (1) The aerodrome operator and all entities which operate on an aerodrome shall provide training to their personnel. Personnel in this context includes but is not limited to persons who manage or conduct inspections of runways, taxiways and apron surfaces, measurement of runway friction, maintenance, works safety officers, safety managers, reporting officers, rescue and fire fighting and emergency personnel, marshallers, ground handlers, wildlife management personnel, fuelling personnel, helicopter landing officers, hazardous material handlers and personnel who provide official reports of conditions to air traffic control, flight service stations or aircraft operators.
- (2) The aerodrome operator shall ensure that all entities providing aerodrome services on its aerodrome, provide the training specified in (1) above.

- (3) The aerodrome operator shall retain training records, including confirmation of competency for each individual responsible for maintenance activities. If a certificate of competency is issued, it shall clearly specify the name of the individual, the training institution and location, the date of certification and the subject matter for which the certificate is being awarded.

27.42 CRITERIA FOR EVALUATION OF RUNWAY SURFACE FRICTION AND RUBBER REMOVAL

- (1) The Primary factors that contribute to the deterioration of skid resistance of runway pavements are directly dependent upon the volume and type of aircraft traffic. Table 1 shall be used as base criteria for scheduling runway friction testing and rubber removal.

Table 1 – Friction Testing Frequency and Rubber Removal

NO. OF DAILY MINIMUM AIRCRAFT LOADING PER RUNWAY END	MINIMUM FRICTION TESTING FREQUENCY	RUBBER DEPOSIT REMOVAL FREQUENCY
Less than 15	1 Year	2 years
16 to 30	6 months	1 year
31 to 90	3 months	6 months
91 to 150	1 month	4 months
151 to 210	2 weeks	3 months
Greater than 210	1 week	2 months

Note: As data are accumulated on the rate of change of runway friction under various traffic conditions, the scheduling of friction surveys may be adjusted to ensure that evaluators detect and predict degraded friction conditions in time to take corrective actions.

- (2) Mu numbers (friction values) measured by continuous friction measuring equipment (CFME) shall be used for evaluating the surface friction deterioration of runway pavements and identifying appropriate corrective actions required for safe aircraft operations. Table 2 depicts the friction values for two classification levels for qualified CFME operated at test speeds of 65 and 95 km/h (40 and 60 mph).

Table 2 - Friction Level Classifications for Runway Pavement Surfaces Using CFME with Self-Wetting Systems

Test Device	65 km/h (40 mph)		95 km/h (60 mph)	
	Action Level	Planning Level	Action Level	Planning Level
Airport Surface Friction Tester	0.50	0.60	0.34	0.47
BV-11 Skiddometer	0.50	0.60	0.34	0.47
GripTester Friction Tester	0.43	0.53	0.24	0.36
Mu Meter	0.42	0.52	0.26	0.38
RUNAR (operated at fixed 16% slip)	0.45	0.52	0.32	0.42
Runway Friction Tester (M 6800)	0.50	0.60	0.41	0.54

- (3) In situations where there are no means of evaluating surface friction deterioration of runway pavements, rubber deposit removal shall be scheduled in accordance with table 1 under paragraph (1).

27.43 FRICTION EQUIPMENT PERFORMANCE STANDARD

The CFME may be self-contained or towed. If towed, the tow vehicle will be considered an integral part of the device. The vehicles or trailers must comply with national requirements for vehicles or trailers used on public roads. Performance specifications for continuous friction measuring equipment are provided in the GCADs Part 14.

27.44 RUBBER REMOVAL EQUIPMENT

- (1) Mechanical rubber removal equipment used on asphalt or portland cement concretes to remove rubber accumulations shall be controlled to minimize disturbance to asphalt or tar mixtures and prevent removal of hardened paste from the concrete. Basic hand tools and the following major types of mechanical equipment are considered acceptable for rubber removal.
- (a) Water blasting Equipment - mobile water blasting equipment capable of producing a pressurized stream of water that will effectively remove rubber from the pavement surface without significantly damaging the pavement. Water pressure shall be regulated so that all rubber accumulations are substantially removed during execution of the work.
 - (b) Shot blasting Equipment - mobile self-propelled shot blasting equipment capable of producing an adjustable depth of rubber removal and of propelling abrasive

particles at high velocities on the rubber for effective removal. Each unit shall be self-cleaning and self-contained. The equipment shall be able to confine the abrasive, any dust that is produced, and removed rubber; and be capable of recycling the abrasive for reuse.

- (c) Sandblasting Equipment - mobile sandblasting equipment shall be capable of producing a pressurized stream of sand and air that will effectively remove rubber from the pavement surface without filling voids with debris in asphalt or tar pavements or removing joint sealants in Portland cement concrete pavements.
- (2) Chemical rubber removal equipment shall be capable of application and removal of chemicals from the pavement surface and shall leave only non-toxic biodegradable residue.

27.45 AIRCRAFT EMERGENCIES DURING RUBBER REMOVAL

Emergency landings and take-offs shall take precedence over rubber removal operations. When notified of an emergency situation, all rubber removal operations shall cease and the runway shall be immediately cleared of all equipment and personnel for at least a distance beyond the safety areas.

27.46 CRITERIA FOR RUNWAY PAVEMENT LOADING

- (1) Operational limitation in terms of pavement loading shall not be applied to Aircraft with an ACN less than the PCN of the runway to be used.
- (2) Where the ACN of an aircraft expected to use a runway is more than the runway PCN, the aircraft shall not operate on a pavement with a frequency of more than 5 percent of the total annual aircraft movement.