

PROPOSED CHANGES TO DRAFT CIVIL AVIATION (HELIPORTS) REGULATIONS 2023

	Name of Regulation	KCARs 2022 Regulatory Provision	Draft KCARs 2024 Regulatory Provision	Proposed changes	Reason for proposed change
1.	Civil Aviation (Heliports) Regulations				
2	Interpretation	-	<u>“ascent/descent surface” means an inclined plane or complex surface that slopes upward from the centre of the FATO to indicate the path helicopters are expected to follow when vertical procedures are utilized – it can consist of:</u> a) <u>an inverted triangle when there is no lateral component; or</u> b) <u>an inverted conical surface when there is a lateral component.</u>	Inserting a new definition	New definition included in Amendment 10 of Annex 14 Volume II
		“Declared distances” — heliports— a. Take-off distance available (TODAH) - the length of the FATO plus the length of helicopter clearway (if provided) declared available and suitable for helicopters to complete the take-off.	<u>“Declared distances” — heliports—</u> a. <u>Take-off distance available (TODAH) - the length of the FATO plus the length of helicopter clearway or elevated helicopter clearway (if provided) declared available and suitable for helicopters to complete the take-off.</u>	Definition amended to due to inclusion of the provision of elevated helicopter clearway	definition amended in Amendment 10 of Annex 14 Volume II
		-	<u>“Elevated helicopter clearway” means a helicopter clearway that has been raised to a level that provides obstacle clearance.</u>	Inserting a new definition	New definition included in Amendment 10

					of Annex 14 Volume II
		“Helicopter clearway” means a defined area on the ground or water, selected and/or prepared as a suitable area over which a helicopter operated in performance class 1 may accelerate and achieve a specific height;	“Helicopter clearway” means a defined area over which a helicopter may accelerate and achieve specified set of helicopter flight conditions;	Definition reviewed due to changes in Annex provisions.	definition amended in Amendment 10 of Annex 14 Volume II to differentiate it with those for aeroplanes in Runway type FATOs
		-	<u>“Initial departure fix (IDF)” means the terminal fix for the visual segment and the fix where the instrument phase of the PinS departure begins</u>	Inserting a new definition	New definition included in Amendment 10 of Annex 14 Volume II
		“Point-in-space approach (PinS)” means the Point-in-space approach is based on GNSS and is an approach procedure designed for helicopters only It is aligned with a reference point located to permit subsequent flight manoeuvring or approach and landing using visual manoeuvring in adequate visual conditions to see and avoid obstacles;	“Point-in-space <u>(PinS)</u> approach” means an approach procedure designed for helicopters only <u>that includes both visual and an instrument segment-</u>	Definition reviewed due to changes in Annex provisions.	Definition amended in Amendment 10 of Annex 14 Volume II to encapsulate those Category A procedures that are for other than runway-types departures/arrivals.

		-	<u>“Point-in-space (PinS) departure” means a departure procedure designed for helicopters only that includes both a visual and an instrument segment.</u>	Inserting a new definition	New definition included in Amendment 10 of Annex 14 Volume II
		-	<u>“Point-in-space (PinS) reference point (PRP)” means reference point for the point-in-space approach as identified by the latitude and longitude of the MAPt.</u>	Inserting a new definition	New definition included in Amendment 10 of Annex 14 Volume II
		“Point-in-space (PinS) visual segment” means the segment of a helicopter PinS approach procedure from the (MAPt) to the landing location for a PinS “proceed visually” procedure. This visual segment connects the Point-in-space (PinS) to the landing location;	<u>“Point-in-space (PinS) visual segment” means the segment of a helicopter PinS procedure between a point (MAPt or IDF) and the heliport;</u>	Definition reviewed due to changes in Annex provisions.	Definition amended in Amendment 10 of Annex 14 Volume II to encapsulate those Category A procedures that are for other than runway-types departures/arrivals.
		-	<u>“Vertical procedures” means take-off and landing procedures that include an initial vertical/steep climb and a final vertical/steep descent profile. The profile may or may not include a lateral component.</u>	Inserting a new definition	New definition included in Amendment 10 of Annex 14 Volume II to encapsulate those Category A procedures that are for

					other than runway-types departures/arrivals
13	Heliport dimensions and related information	13 (1) The heliport operator shall measure or describe the following data, as appropriate, for each facility provided on a heliport— g) clearway — length, ground profile, or, when elevated, height above the FATO, length and width; and h) visual aids for approach procedures, marking and lighting of FATO, TLOF, helicopter ground taxiways, helicopter air taxiways and helicopter stands.	13 (1) The heliport operator shall measure or describe the following data, as appropriate, for each facility provided on a heliport— (g) approach surface — when elevated, the height of the inner edge above the FATO; (h) helicopter clearway — length, ground profile, or, when elevated, height above the FATO, length and width; and (i) visual aids for approach procedures, marking and lighting of FATO, TLOF, helicopter ground taxiways, helicopter air taxiways and helicopter stands.	Insert requirement for approach surface and amend the requirements for clearway due to amendment in Annex 14 Vol. II	To comply with the amended provisions of Annex 14 Vol. II on heliport dimensions and related information.
21	Helicopter clearways	21. (1) A helicopter clearway shall provide: a) an area free of obstacles, except for essential objects which because of their function are located on it, and of sufficient size and shape to ensure containment of the design helicopter when it is accelerated in level flight, and close to the surface, to achieve its safe climbing speed;-and	21. (1) A helicopter clearway shall provide: a) an area free of obstacles, except for essential objects which because of their function are located on it, and of sufficient size and shape to ensure containment of the design helicopter when it is accelerating to achieve its safe climbing speed; and b) a surface which is contiguous and flush with the FATO and safety area when solid, resistant to the effects of rotor downwash, and free of hazards if a forced landing is required; or . c) clearance above all obstacles when elevated	Text reviewed for clarity to comply with amendment 10 of Annex 14 Vol. II	To comply with the amended provisions of Annex 14 Vol. II to facilitate promulgation of the elevation of the helicopter clearway, approach and take-off climb surface.

		b) a surface which is contiguous and flush with the FATO when solid, resistant to the effects of rotor downwash, and free of hazards if a forced landing is required (2) A helicopter clearway shall be located; beyond the end of the FATO and its width is not less than that of the FATO and associated safety area as specified in the <i>Second Schedule</i> (Figure S3-1).	(2) The inner edge of a helicopter clearway when provided shall be located; a) at the outer edge of the safety area as specified in the Second Schedule (Figure S3-1); or b) directly above, or directly below, the outer edge of the safety area when the clearway is elevated		
	Final approach and take-off areas and touch down and lift-off areas	28. (1) A helideck shall be provided with one FATO and one coincident or collocated TLOF. (2) A FATO shall be of sufficient size to contain an area which accommodates a circle of diameter not less than 1 D of the largest helicopter the helideck is intended to serve. (3) A TLOF shall be of sufficient size to contain an area within which can be accommodated a circle of diameter not less than; a) 1 D of the largest helicopter the helideck is intended to serve for helicopters with an MTOM of more than 3 175 kg ; and	28. (1) A helideck shall be provided with one FATO and one coincident or collocated TLOF. (2) A FATO shall be of sufficient size to contain an area which accommodates a circle of diameter not less than 1 D of the largest helicopter the helideck is intended to serve. (3) A TLOF <u>may be any shape but, subject to an appropriate risk assessment</u> shall be of sufficient size to contain an area within which can be accommodated a circle of diameter not less than; 0.83 D of the largest helicopter the helideck is intended to serve (4) A helideck shall be arranged to ensure that a sufficient and unobstructed airgap is provided	Removal of the helicopter weight to allow for risk assessment for any FATO with a diameter less than 1D	To comply with the amended provisions of Annex 14 Vol. II to facilitate risk assessment without limitation on helicopter weight which was introducing contradicting provisions

		b) 0.83 D of the largest helicopter the helideck is intended to serve for helicopters with an MTOM of 3 175 kg or less. (4) Subject to sub-regulation (2) and (3), the FATO and TLOF may be of any shape. (7) A fixed object shall not be permitted around the edge of the TLOF except for frangible objects, which, because of their function, must be located thereon.	which encompasses the full dimensions of the FATO. (5) The TLOF shall: a. be dynamic load bearing; and b. provide ground effect. (6) A fixed object shall not be permitted around the edge of the TLOF except for frangible objects, which, because of their function, must be located thereon.		
	Approach surface	32 (1) Approach surface shall be an inclined plane or a combination of planes or, when a turn is involved, a complex surface sloping upwards from the end of the safety area and centered on a line passing through the centre of the FATO.	32 (1) Approach surface shall be an inclined plane or a combination of planes or, when a turn or turns are involved, a complex surface sloping upwards from the inner edge and centered on a line passing through the centre of the FATO.	To include provision for more than one turn and change of reference point	To comply with the amended provisions of Annex 14 Vol. II on requirement of approach surface.
		32 (2) The limits of an approach surface shall comprise— a) an inner edge horizontal and equal in length to the minimum specified width or diameter of the FATO plus the safety area, perpendicular to the centre line of the approach surface and located at the outer edge of the safety area;	32 (2) The limits of an approach surface shall comprise— a) an inner edge, horizontal and perpendicular to the centre line of the approach surface, with a minimum width equal to the specified width or diameter of the FATO plus the safety area, and located at;	To provide for changes in the	To comply with the amended provisions of Annex 14 Vol. II on requirement of approach surface.

		b) two side edges originating at the ends of the inner edge diverging uniformly at a specified rate from the vertical plane containing the centre line of the FATO; and: c) An outer edge horizontal and perpendicular to the centre line of the approach surface and at a specified height of 152 m above the elevation of the FATO.	i. the outer edge of the safety area; <u>or</u> ii. <u>when vertical procedures are being utilized, directly above the outer edge of the safety area.</u> b) two side edges originating at the ends of the inner edge diverging uniformly at a specified rate from the vertical plane containing the centre line of the FATO; and: c) an outer edge horizontal and perpendicular to the centre line of the approach surface at; i. a specified height of 152 m above the elevation of the FATO; <u>or</u> ii. <u>when a PinS approach procedure with proceed visually instruction is defined, a specified height above the elevation of the FATO.</u>		
		32 (3) The elevation of the inner edge shall be the elevation of the FATO at the point on the inner edge that is intersected by the centre line of the approach surface.	32 (3) The elevation of the inner edge shall be;	To include the provision for the new requirement for vertical procedure	To comply with the amended provisions of Annex 14 Vol. II on requirement to facilitate the use of vertical procedure on approach surface.
		(4) Subject to sub-regulation (3), the origin of the inclined plane may	Deleted	Provision deleted from Annex 14	To comply with the amended

		be raised directly above the FATO for heliports intended to be used by helicopters operated in performance class 1 and when approved by an appropriate authority.		volume 2 and subsequent provisions renumbered.	provisions of Annex 14 Vol. II on requirement of approach surface.
		32 (6) The surface shall be a complex surface containing the horizontal normal to its centre line for an approach surface involving a turn. (7) Subject to sub-regulation (6), the slope of the centre line shall be the same as that for a straight approach surface. (8) Notwithstanding sub-regulations (6) and (7), the approach surface involving a turn shall not contain more than one curved portion.	32 (5) The surface shall be a complex surface containing the horizontal normals to its centre line for an approach surface involving a turn or turns. (6) Subject to sub-regulation (5), the slope of the centre line shall be the same as that for a straight approach surface.	Minor changes for clarity and deletion of Sub-regulation 8 due to amendment on Annex 14 Vol.II	To comply with the amended provisions of Annex 14 Vol. II where the provision for more than one turn was removed on assumption that all approach surfaces would be of Type C.
		(9). The sum of the radius of arc defining the centre line of the approach surface and the length of the straight portion originating at the inner edge shall not be less than 575 m where a curved portion of an approach surface is provided.	(7). The sum of the radius of arc defining the centre line of the approach surface and the length of the straight portion originating at the inner edge shall not be less than 575 m where a curved portion of a design category B or C approach surface is provided.	Introduction of design category B or C	To comply with the amended provisions of Annex 14 Vol. II to cater for the curved portion of approach surfaces other than type C.
	Transitional surface	33 (1) A transitional surface shall be a complex surface along the side of the safety area and part of the	33 (1) A transitional surface shall be a complex surface along the side of the safety area and helicopter clearway, when provided, and part of	To incorporate changes in Annex 14 Vol II with changes in	To comply with the amended provisions of

		side of the approach/take-off climb surface, that slopes upwards and outwards to a predetermined height of 45 m (2) A FATO at a heliport without a PinS approach incorporating a visual segment surface (VSS) shall not be required to provide transitional surfaces. (3) The limits of a transitional surface shall comprise—	the side of the approach/take-off climb surface, that slopes upwards and outwards to a predetermined height (2) The limits of a transitional surface shall comprise— (a) a lower edge beginning at a point on the side of the approach or take-off climb surface at a specified height extending down the side of the approach or take-off climb surface to the inner edge and from there along the length of the side of the helicopter clearway, when provided, and safety area parallel to the centre line of the FATO; and (b) An upper edge located at; i. <u>45 m (150 ft) above the FATO;</u> <u>or</u> ii. <u>when vertical procedures are being utilized; 15 m (50 ft) above the elevation of the upper edge of the ascent/descent surface.</u>	the text and deletion of some provisions in Annex 14 Volume II	Annex 14 Vol. II because use of the vertical procedure requires the inner edge of the approach or take-off climb surface to be elevated, the level of the helicopter clearway and inner edge will beat a different level to the safety area.
	Take-off climb surface	34 (1) A take-off climb surface shall be an inclined plane, a combination of planes or, when a turn is involved, a complex surface sloping upwards from the end of the safety area, and centered on a line passing through the centre of the FATO.	34 (1) A take-off climb surface shall be an inclined plane, a combination of planes or, when a turn or turns are involved, a complex surface sloping upwards from the end of the safety area, , or of the helicopter clearway, when provided,	To include provisions for several turns and helicopter clearway	To comply with the amended provisions of Annex 14 Vol. II on requirement of helicopter clearway

			and centered on a line passing through the centre of the FATO.		
		(2) The limits of a take-off climb surface shall comprise— (a) an inner edge horizontal and equal in length to the minimum specified width/diameter of the FATO plus the safety area, perpendicular to the centre line of the take-off climb surface and located at the outer edge of the safety area; (b) two side edges originating at the ends of the inner edge and diverging uniformly at a specified rate from the vertical plane containing the centre line of the FATO; and (c) An outer edge horizontal and perpendicular to the centre line of the take-off climb surface and at a specified height of 152 m (500 ft) above the elevation of the FATO.	(2) The limits of a take-off climb surface shall comprise— (a) an inner edge horizontal and perpendicular to the centre line of the take-off climb surface, with a minimum width of the width/diameter of: (i) when located at the outer edge of the safety area or helicopter clearway, the FATO plus the safety area; or (ii) when located at the outer edge of the elevated helicopter clearway, the elevated helicopter clearway. (b) two side edges originating at the ends of the inner edge and diverging uniformly at a specified rate from the vertical plane containing the centre line of the FATO; and (c) An outer edge horizontal and perpendicular to the centre line of the take-off climb surface at: (i) a height of 152 m (500 ft) above the elevation of the FATO; or (ii) when a PinS departure procedure with proceed visually instruction is defined, a specified height above the elevation of the FATO.	To facilitate use of vertical procedures, and elevated heliport clearways	To comply with the amended provisions of Annex 14 Vol. II on requirement of helicopter clearway and vertical procedures
		34 (3) The elevation of the inner edge shall be the elevation of the FATO at the point on the inner edge that is intersected	34 (3) The elevation of the inner edge shall be: (a) the elevation of the FATO at the point on the inner edge that is	To include the provision of elevated helicopter clearway and deleting some provisions	To comply with the amended provisions of Annex 14 Vol.

		by the centre line of the take-off climb surface. (4) The origin of the inclined plane may be raised directly above the FATO for heliports intended to be used by helicopters operated in performance class 1 and when approved by an appropriate authority.	intersected by the centre line of the take-off climb surface; or (b) <u>when located at the outer edge of the helicopter clearway, the elevation of the helicopter clearway.</u>		II on requirement of helicopter clearway and vertical procedures
		(5) The elevation of the inner edge of the take-off climb surface where a clearway is provided, shall be located at the outer edge of the clearway at the highest point on the ground based on the centre line of the clearway.	(4) The origin of the inclined plane may be raised directly above the FATO for heliports intended to be used by helicopters operated in performance class 1 and when approved by an appropriate authority. (5) The elevation of the inner edge of the take-off climb surface where a clearway is provided, shall be located at the outer edge of the clearway at the highest point on the ground based on the centre line of the clearway		
		34 (6) The slope shall be measured in the vertical plane containing the centre line of the surface in the case of a straight take-off climb surface. (7) The surface shall be a complex surface containing the horizontal normals to its centre line in the case of a take-off climb surface involving a turn. (8) Subject to sub-regulation (7), the slope of the centre line shall be the same as that for a straight take-	34 (4) The slope shall be measured in the vertical plane containing the centre line of the surface in the case of a straight take-off climb surface. (7) The surface shall be a complex surface containing the horizontal normals to its centre line in the case of a take-off climb surface involving a turn or turns. (8) Subject to sub-regulation (5), the slope of the centre line shall be the same as that for a straight take-off climb surface as set out in the <i>Second Schedule (Figure S3-12)</i>.	Deleting some provisions and amending text due to provision of An14 Vol. II	To comply with the amended provisions of Annex 14 Vol. II on requirement of helicopter clearway and vertical procedures

		off climb surface as set out in the <i>Second Schedule (Figure S3-12)</i> . (9) Notwithstanding sub-regulations (7) and (8), take-off climb surface involving a turn, shall not contain more than one curved portion.			
		34 (10) The sum of the radius of arc defining the centre line of the take-off climb surface and the length of the straight portion originating at the inner edge shall not be less than 575 m where a curved portion of a take-off climb surface is provided. (11) Any variation in the direction of the centre line of a take-off climb surface shall be designed so as not to necessitate a turn of radius less than 270 m.	34 (7) The sum of the radius of arc defining the centre line of the take-off climb surface and the length of the straight portion originating at the inner edge shall not be less than 575 m where a curved portion of a design category B or C take-off climb surface is provided. (8) Any variation in the direction of the centre line of a take-off climb surface shall be designed so as not to necessitate a turn of radius less than 270 m.	Addition of the design category of the take-off climb surface and renumbering	To comply with the amended provisions of Annex 14 Vol. II with the presence of a straight section or reduced radius of turn limited to the type B or type C surfaces.
Obstacle Limitation Requirements					
	Onshore Heliports	37 (1) The following obstacle limitation surfaces shall be established for a FATO at heliports with a PinS approach procedure utilizing a visual segment surface as specified in the <i>Second Schedule (Figure S3-10)</i> : (a) take-off climb surface; (b) approach surface; and (c) transitional surface	37 (1) The following obstacle limitation surfaces shall be established for a FATO at heliports with a PinS approach or departure procedure with a proceed visually instruction: (a) take-off climb surface; (b) approach surface; and (c) transitional surface (2) Notwithstanding sub-regulation (1), the following obstacle limitation surfaces shall be established for a FATO at heliports	Amendments of Regulation text and deletions of some provisions	To comply with the amended provisions of Annex 14 Vol. II to include departure procedures and requirements for visual instructions

		(2) Notwithstanding sub-regulation (1), the following obstacle limitation surfaces shall be established for a FATO at heliports including those with a PinS approach procedure where a visual segment surface is not provided: (a) take-off climb surface; and (b) approach surface. (3) The slopes of the obstacle limitation surfaces shall not be greater than, and their other dimensions not less than, those specified in the <i>Second Schedule (Table S3-2)</i> (4) Subject to sub-regulation (3), the obstacle limitation surfaces shall be located as specified in the <i>Second Schedule (Figures S3-11, S3-12 and S3-16)</i>.	including those with a PinS approach or departure procedure without a proceed visually instruction: (a) take-off climb surface; and (b) approach surface. (3) The slopes of the obstacle limitation surfaces shall not be greater than, and their other dimensions not less than, those specified in the <i>Second Schedule (Table S3-2)</i>		
		(5) Objects shall be permitted to penetrate the obstacle limitation surface, for heliports that have an approach/take-off climb surface with a 4.5 per cent slope design, if the results of an aeronautical study approved by the Authority have reviewed the associated risks and mitigation measures. (6) New objects or extensions of existing objects shall not be	(4) New objects or extensions of existing objects shall not be permitted above any of the surfaces in sub-regulations (1) and (2). (5) Existing objects above any of the surfaces in sub-regulations (1) and (2) shall, as far as practicable, be removed except when the object is shielded by an existing immovable object (6) A heliport shall have at least two approach and take-off climb surfaces, separated by not less than 135°.	Amendments of Regulation text and deletions of some provisions on aeronautical studies and helidecks	To comply with the amended provisions of Annex 14 Vol. II to remove requirements of aeronautical study & elevated heliports. New provision of more than

		permitted above any of the surfaces in sub-regulations (1) and (2). (7) Notwithstanding sub-regulation (6), objects may be permitted when shielded by an existing immovable object or after an aeronautical study approved by the Authority determines that the object will not adversely affect the safety or significantly affect the regularity of operations of helicopters. (8) A surface-level and elevated heliports shall have at least one approach and take-off climb surface. (9) Subject to sub-regulation (8), an aeronautical study shall be undertaken by an appropriate authority when only a single approach and take-off climb surface is provided considering as a minimum, the following factors— (a) the area/terrain over which the flight is being conducted; (b) the obstacle environment surrounding the heliport and the availability of at least one protected side slope; (c) the performance and operating limitations of helicopters intending to use the heliport; and			one approach and take-off climb surface
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		(d) The local meteorological conditions including the prevailing winds.			
	Wind direction indicators	45 (3) It shall be visible from a helicopter in flight, in a hover or on the movement area with dimensions as specified in the Second Schedule (Table S3-7)	45 (3) It shall be visible from a helicopter in flight, in a hover or on the movement area with dimensions as specified in the Second Schedule (Table S3-3)	Table S3-7 moved as renamed as Table S3-3. It had been skipped and table S3-3 was missing	Rearrangement of the Table for flow of Regulation without change in text
		59 (2) A helicopter air taxi-route centre line marking, or flush in-ground centre line marker shall be located along the centre line of the helicopter air taxi-route. (4) A helicopter air taxi-route centre line, when on an unpaved surface that will not accommodate painted markings, shall be marked with flush in-ground 15 cm wide and approximately 1.5 m in length yellow markers.	59 (2) A helicopter air taxi-route centre line marking, or markers shall be located along the centre line of the helicopter air taxi-route. (4) A helicopter air taxi-route centre line, that will not accommodate painted markings, shall be marked with markers.	Amendment of text for meaning following amendment in Annex 14 Volume II.	To comply with the amended provisions of Annex 14 Vol. II
	Heliport beacon	63 (2) Where provided, the heliport beacon shall be located on or adjacent to the heliport preferably at an elevated position and so that it does not dazzle a pilot at short range. (3) Where a heliport beacon in sub-regulation (2) is likely to dazzle pilots at short range, it	63 (2) Where provided, the heliport beacon shall be located on or adjacent to the heliport preferably at an elevated position and so that it does not dazzle a pilot at short range. (3)	Regulations 63 Sub-regulations (3) to (5) deleted	To comply with the amended provisions of Annex 14 Vol. II to exclude the requirement of the characteristics of heliport beacon

		may be switched off during the final stages of the approach and landing. (4) The heliport beacon shall emit repeated series of equispaced short duration white flashes showing at all angles of azimuth in the format shown in Figure S3-33. (5) The effective light intensity distribution of each flash should be as shown in Figure S3-34.			
	Approach lighting system	64 (1) An approach lighting system should be provided at a heliport where it is desirable and practicable to indicate a preferred approach direction (2) Where provided, the approach lighting system shall be located in a straight line along the preferred direction of approach. (3) Where provided, an approach lighting system shall consist of a row of three lights spaced	64 (1) An approach lighting system should be provided at a heliport where it is desirable and practicable to indicate a preferred approach direction	Characteristics of the approach lights deleted	To comply with the amended provisions of Annex 14 Vol. II to allow operators some flexibility on the systems that they may (optionally) provide.

		uniformly at 30 m intervals and of a crossbar 18 m in length at a distance of 90 m from the perimeter of the FATO as shown in <i>Figure S3-35</i>. (4) Subject to sub-regulation (3), the lights forming the crossbar shall be as nearly as practicable in a horizontal straight line at right angles to, and bisected by, the line of the centre line lights and spaced at 4.5 m intervals. (5) Where there is the need to make the final approach course more conspicuous, additional lights spaced uniformly at 30 m intervals may be added beyond the crossbar. (6) The lights beyond the crossbar may be steady or sequenced flashing, depending upon the environment			
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		(7) The steady and sequenced flashing lights shall be omnidirectional white lights (8) The flashing lights shall have a flash frequency of one per second and their light distribution be as shown in <i>Figure S3-34</i>, Illustration 3. (9) The flash sequence should commence from the outermost light and progress towards the crossbar. (10) A suitable brilliancy control may be incorporated to allow for adjustment of light intensity to meet the prevailing conditions. (11) The following intensity settings are suitable: — a) steady lights — 100 per cent, 30 per cent and 10 per cent; and b) Flashing lights — 100 per cent, 10 per cent and 3 per cent.			
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	Flight path alignment guidance lighting system	65 (2) The flight path alignment guidance lighting system shall be in a straight line along the direction(s) of approach and/or departure path on one or more of the TLOF, FATO, safety area or any suitable surface in the immediate vicinity of the FATO, TLOF or safety area. (2) The lights shall be steady omnidirectional inset white lights.	65 (1) The flight path alignment guidance lighting system shall be provided at a heliport where it is desirable and practicable to indicate available approach and/or departure path direction (s). (2) The flight path alignment guidance lighting system shall be in a straight line along the direction(s) of approach and/or departure path on one or more of the TLOF, FATO, safety area or any suitable surface in the immediate vicinity of the FATO, TLOF or safety area. (3) The lights shall be steady omnidirectional inset white lights.	A new provision inserted following amendment to Annex 14 Volume II	To comply with the amended provisions of Annex 14 Vol. II to provide for applicability
	Visual approach slope indicator.	67 (1) A visual approach slope indicator shall be provided to serve the approach to a heliport, whether or not the heliport is served by other visual approach aids or by non-visual aids, where one or more of the following conditions exist especially at night— (a) obstacle clearance, noise abatement or traffic control procedures require a particular slope to be flown;	67 (1) A visual approach slope indicator shall be provided to serve the approach to a heliport, whether or not the heliport is served by other visual approach aids or by non-visual aids, where one or more of the following conditions exist especially at night— (a) obstacle clearance, noise abatement or traffic control procedures require a particular slope to be flown; (b) the environment of the heliport provides few visual surface cues; and (c) the characteristics of the helicopter require a stabilized approach.	Provisions of Regulation 68 were mixed up with 67 and consequently the initial Regulation 68 “Final approach and take-off area for onshore surface-level heliports” was excluded. The text for Regulation 68 included in 67 deleted and Regulation 68 included with 67 Sub (2) to 4 forming part of Regulation 68 and the preceding	Error during review.

	(b) the environment of the heliport provides few visual surface cues; and (c) the characteristics of the helicopter require a stabilized approach. (2) FATO lights shall be placed along the edges of the FATO and uniformly spaced as follows— (a) for an area in the form of a square or rectangle, at intervals of not more than 50 m with a minimum of four lights on each side including a light at each corner; and (b) for any other shaped area, including a circular area, at intervals of not more than 5 m with a minimum of ten lights. (3) FATO lights shall be fixed omnidirectional lights showing white. (4) Pursuant to sub-regulation (3), where the intensity of the lights is to be		regulations numbering updated	
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		varied, the lights shall show variable white.			
	Final approach and take-off area perimeter lights for onshore surface-level heliports	Erroneously mixed up with Regulation 67	68. (1) Where a FATO with a solid surface is established at a surface-level heliport intended for use at night, FATO perimeter lights shall be provided except that they may be omitted where the FATO and the TLOF are nearly coincidental, or the extent of the FATO is self-evident. (2) FATO perimeter lights shall be placed along the edges of the FATO and uniformly spaced as follows— (a) for an area in the form of a square or rectangle, at intervals of not more than 50 m with a minimum of four lights on each side including a light at each corner; and (b) For any other shaped area, including a circular area, at intervals of not more than 5 m with a minimum of ten lights. (3) FATO perimeter lights shall be fixed omnidirectional lights showing green or white with variable intensity	Sub-regulation (1) which was omitted re-introduced and Sub-regulation (2) to (4) erroneously included in Regulation 67 transferred to Reg. 68. Additionally, the regulation amended to include perimeter lights and variation in colour	Mixed up between Reg 67 and 68 corrected and revised to comply with the amended provisions of Annex 14 Vol. II was updated to provide options for green or white colour FATO lights
	Aiming point lights	69 (1) Aiming point lights where provided shall collocated with the aiming point marking for a heliport intended for use at night. (2) Aiming point lights shall form a pattern of at least six	69 (1) Aiming point lights where provided shall collocated with the aiming point marking for a heliport intended for use at night. (2) Aiming point lights shall form a pattern of at least six omnidirectional white lights as shown in Figure S3-23.	Addition of Sub- reg (3) due to a new provision and renumbering of Table S3-29 to S3-23	To comply with the amended provisions of Annex 14 Vol. II was updated to display the lights arranged in a standard

		omnidirectional white lights as shown in Figure S3-29. (3) Pursuant to sub-regulation (2), the lights shall be inset when a light extending above the surface could endanger helicopter operations.	(3) The lights shall be arranged equidistantly with a light at the apex and at both corners. (4) Pursuant to sub-regulation (3), the lights shall be inset when a light extending above the surface could endanger helicopter operations.		pattern which pilots can easily recognize
	Touchdown and lift-off area lighting system	70 (1) A TLOF lighting system shall be provided at a heliport intended for use at night. (2) For a surface-level heliport, lighting for the TLOF in a FATO shall consist of one or more of the following— (a) perimeter lights; or (b) floodlighting; or (c) Arrays of segmented point source lighting (ASPSL) or luminescent panel (LP) lighting to identify the TLOF when a) and b) are not practicable and FATO lights are available. (3) For an elevated heliport, shipboard heliport or helideck, lighting of the TLOF in a FATO shall consist of— (a) perimeter lights; and	70 (1) A TLOF lighting system shall be provided at a heliport intended for use at night. (2) For a surface-level heliport, lighting for the TLOF in a FATO shall consist of either of the following— (a) perimeter lights; or (b) Arrays of segmented point source lighting (ASPSL) or luminescent panel (LP) lighting to identify the TLOF perimeter when a) is not practicable and FATO perimeter lights are available. (3) For an elevated heliport, shipboard heliport or helideck, lighting of the TLOF in a FATO shall consist of— (c) perimeter lights; and (d) ASPSL and/or LPs to identify the TDPC and/or floodlighting to illuminate the TLOF. (4) TLOF perimeter lights shall be placed along the edge of the area designated for use as the TLOF or within a distance of 1.5 m from the outer edge. (5) TLOF perimeter lights shall be uniformly spaced at intervals of not more than 3 m for	Some provisions amended and others downgraded to the heliport manual	To comply with the amended provisions of Annex 14 Vol. II. Some provisions downgraded to the heliport manual and other deleted due to difficulty in measurements such as horizontal luminance.

		(b) ASPSL and/or LPs to identify the TDPM and/or floodlighting to illuminate the TLOF. (4) TLOF perimeter lights shall be placed along the edge of the area designated for use as the TLOF or within a distance of 1.5 m from the edge. (5) Where the TLOF is a circle, the lights shall be: (a) located on straight lines in a pattern which will provide information to pilots on drift displacement; and (b) Where (a) is not practicable, evenly spaced around the perimeter of the TLOF at the appropriate interval, except that over a sector of 45 degrees the lights shall be spaced at half spacing.	elevated heliports, helidecks, and shipboard heliports and not more than 5 m for surface-level heliports. (6) The TLOF perimeter lights shall be installed at an elevated heliport or fixed helideck such that the pattern cannot be seen by the pilot from below the elevation of the TLOF.		
			(7) The TLOF perimeter lights shall be installed on a moving helideck or shipboard heliport, such that the pattern cannot be seen by the pilot from below the elevation of the TLOF when the helideck or shipboard heliport is level. (8) TLOF floodlights shall be arranged so as to avoid glare to pilots in flight and to personnel working on the area. (9) The TLOF perimeter lights shall be fixed omnidirectional lights showing green. (10) At a surface-level heliport, ASPSL or LPs shall emit green light when used to define the perimeter of the TLOF. (11) For a surface level or elevated heliport, the TLOF perimeter lights located in a FATO shall not exceed a height of 5 cm and be inset when a light extending above the surface could endanger helicopter operations. (12) For a helideck or shipboard heliport, the TLOF perimeter lights shall not exceed		

		(6) TLOF perimeter lights shall be uniformly spaced at intervals of not more than 3 m for elevated heliports and helidecks and not more than 5 m for surface-level heliports. (7) Pursuant to sub-regulation (6), there shall be a minimum number of four lights on each side including a light at each corner. (8) For a circular TLOF, where lights are installed in accordance to sub regulation (5) (b) there shall be a minimum of fourteen lights. (9) The TLOF perimeter lights shall be installed at an elevated heliport or fixed helideck such that the pattern cannot be seen by the pilot from below the elevation of the TLOF. (10) The TLOF perimeter lights shall be installed on a moving helideck or shipboard heliport, such that the pattern cannot be seen by the pilot from below the elevation of the TLOF when the helideck or shipboard heliport is level.	a height of 5 cm, or for a FATO/TLOF, 15 cm. (13) For a helideck or shipboard heliport, the TLOF floodlights shall not exceed a height of 5 cm, or for a FATO/TLOF, 15 cm. (14) The ASPSL and LPs shall not extend above the surface by more than 2.5 cm. (15) The spectral distribution of TLOF area floodlights shall be such that the surface and obstacle marking can be correctly identified.		
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		(11) On surface-level heliports, ASPSL or LPs, if provided to identify the TLOF shall be placed along the marking designating the edge of the TLOF. (12) Where the TLOF in sub-regulation (11) is a circle, they shall be located on straight lines circumscribing the area. (13) On surface-level heliports the minimum number of LPs on a TLOF shall be nine. (14) Subject to sub-regulation (13), the total length of LPs in a pattern shall not be less than 50 per cent of the length of the pattern. (15) There shall be an odd number with a minimum number of three panels on each side of the TLOF including a panel at each corner and LPs uniformly spaced with a distance between adjacent panel ends of not more than 5 m on each side of the TLOF. (16) TLOF floodlights shall be located so as to avoid glare to pilots in flight or to			
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		personnel working on the area. (17) Subject to sub-regulation (16), the arrangement and aiming of floodlights shall be such that shadows are kept to a minimum. (18) The TLOF perimeter lights shall be fixed omnidirectional lights showing green. (19) At a surface-level heliport, ASPSL or LPs shall emit green light when used to define the perimeter of the TLOF. (20) An LP shall have a minimum width of 6 cm with the panel housing being the same colour as the marking it defines. (21) For a surface level or elevated heliport, the TLOF perimeter lights located in a FATO shall not exceed a height of 5 cm and be inset when a light extending above the surface could endanger helicopter operations. (22) For a helideck or shipboard heliport, the TLOF perimeter lights shall not			
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		exceed a height of 5 cm, or for a FATO/TLOF, 15 cm. (23) For a helideck or shipboard heliport, the TLOF floodlights shall not exceed a height of 5 cm, or for a FATO/TLOF, 15 cm. (24) The LPs shall not extend above the surface by more than 2.5 cm. (25) The spectral distribution of TLOF area floodlights shall be such that the surface and obstacle marking can be correctly identified.			
	Schedule 3 Figures	Figures S-3-11 to S3-14 and S3-16		Figures deleted	To comply with the amended provisions of Annex 14 Vol. II to account for changes in approach and take-off climb

					surfaces and design slopes
		Figures S3-15 and S3-17 to S3-23, S3-26 to S3-36	Figures S3-15 and S3-17 to S3-23, S3-26 to S3-36	Figures Re-numbered following deletion of Figures S-3-11 to S3-14, S3-16, S3-34 and S3-36 and the missing S3-24	To comply with the amended provisions of Annex 14 Vol. II to account for changes in approach and take-off climb surfaces and design slopes
		Schedule 3 Figure S3-35	Renamed Figure S3-28 and illustrations 1-3 and 6 deleted with changes in the FATO lights to be provided	Amended to provide more options for FATO lights	To comply with the amended provisions of Annex 14 Vol. II to provide both green or white colour options for FATO lights
	Schedule 3 Tables Table S3-2	Table S3-2. Dimensions and slopes of obstacle limitation surfaces for all visual FATOs	Table S3-2. Approach and take-off climb slope design categories	Table S3-2 amended to account for changes in Take-off climb surface	To comply with the amended provisions of Annex 14 Vol. II to account changes in take-off climb surface
		Note: — The slope design categories in Table S3-2 may not be restricted to a specific performance class of operation and may be applicable to more than one performance class of operation. The slope design categories depicted in Table S3-2 represent minimum design slope angles and not	Note: — <u>Guidance on the application of slope categories is provided in the Heliport Manual (Doc 9261).</u>	Table S3-2 Note amended to account for changes in Take-off climb surface	To comply with the amended provisions of Annex 14 Vol. II to account changes in take-off climb surface

[illegible]

