Title:	**Opinion and Instruction Document** **Helicopter Terrain Awareness and Warning Systems (HTAWS) for Offshore Operations**
Package Number	**Task 0020**
Headline Purpose:	To enhance safety by mandating the use of modified Helicopter Terrain Awareness and Warning Systems for all specified helicopters operating offshore in the UK.
Proposed action:	Amend Commission Regulation (EU) No. 965/2012 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 ("**UK Regulation (EU) No. 965/2012**"), Annex V, Sub-Part K, Part SPA.HOFO.160(c) extending the current equipment requirements to all specified offshore helicopters and introducing enhanced technical standards for HTAWS.

Objective

The objective is to improve the safety of offshore helicopter operations by ensuring that medium and large helicopters engaged in offshore operations are provided with an effective Helicopter Terrain Awareness and Warning System ("**HTAWS**").

To achieve this aim, it is proposed to extend the scope of the current HTAWS mandate under UK Regulation (EU) No. 965/2012, Annex V, Sub-Part K, Part SPA.HOFO.160(c) to include all medium and large HTAWS-equipped helicopters and apply new HTAWS standards designed for offshore helicopter operations.

The present HTAWS requirement under Part SPA.HOFO.160(c) covers only those helicopters issued with a first individual Certificate of Airworthiness after 31 December 2018. Significantly, there continue to be a high number of medium and large helicopters engaged in offshore operations issued with a first individual Certificate of Airworthiness before 31 December 2018. Whilst the majority of helicopters engaged in offshore operations are already equipped with HTAWS on a voluntary basis, including those issued with first individual Certificates of Airworthiness before 31 December 2018, for the desired safety improvement to be realised it is necessary to mandate this requirement for all existing HTAWS-equipped and all future medium and large helicopters used in offshore operations.

No suitable equipment standard existed at the time current HTAWS were designed, and its performance in service has proven to be unsatisfactory. Design improvements have been developed and tested and are detailed in documents published by the CAA. In addition, a new internationally agreed[1] HTAWS standard based on and incorporating the material published by the CAA has been produced and published. This standard specifies improved functionality that will increase the time available to pilots to react to an alert, decreasing the likelihood of an accident. This will also reduce the number of nuisance alerts, which can desensitise pilots to genuine alerts.

The CAA has consulted with affected aircraft and equipment manufacturers and offshore helicopter operators in connection with the new requirement. Based on the responses received, it is considered that upgraded HTAWS could be implemented in the UK offshore helicopter fleet within two years of the issue of the mandate, i.e. by 31 December 2024. Although modifications for upgrading some HTAWS equipment on some helicopter types are already available, there is no guaranteed market to allow the industry to make the investment.

Consequently, the CAA considers that it is necessary to implement the rule change now to create certainty for the affected manufacturers and operators, while allowing a suitable transition period before the requirement takes effect. In the interim period, no specified transitional arrangements are appropriate.

[1] explained in the background section below.

Background

Following a series of five significant accidents during the period 2006 to 2012, CAA commissioned a major review of offshore helicopter operations; the output of the review can be found in "Civil Aviation Authority – Safety review of offshore public transport helicopter operations in support of the exploitation of oil and gas" (published via CAP 1145 in February 2014). In this review, one third of the fatal accidents covered by the accident analysis (two accidents) and one serious but non-fatal accident that occurred during the 20-year period to end 2012 were attributed to either controlled flight into terrain ("**CFIT**") or loss of control in flight ("**LOC-I**"). A further fatal accident attributed to LOC-I occurred in August 2013 shortly after the end of accident analysis period.

HTAWS is specifically designed to prevent CFIT accidents but may also be used to address some LOC-I accident scenarios. Although all medium and large helicopters currently employed in offshore operations are already fitted with HTAWS, either voluntarily or under the existing mandate, no design standard exists for the equipment and its performance has also been criticised. In particular, a number of the UK's Air Accidents Investigation Branch ("**AAIB**") Safety Recommendations have been issued, highlighting the need for improvements to be made to existing HTAWS.

Joint industry research into HTAWS aimed at addressing performance shortfalls was consequently instigated and led by the CAA. The research, (reported in "Class A Terrain Awareness Warning System (TAWS) for Offshore Helicopter Operations" via CAP 1538 and "Class A HTAWS Warning Annunciation" via CAP 1747), identified significant improvements to the currently implemented HTAWS functionality, which have now been incorporated in new equipment standards. An interim retrofit HTAWS standard has been developed and published by CAA (Offshore Helicopter Terrain Awareness Warning System Alert Envelopes" via CAP 1519). Approved equipment modifications are already available to implement this standard in the HTAWS installed on the majority of the UK offshore helicopter fleet.

A formal international Offshore HTAWS standard based on and consistent with CAP 1519 has been developed and published by the relevant international aviation standards bodies (ED-285 published by The European Organisation for Civil Aviation Equipment ("**EUROCAE**") in Europe and DO-376 published by the Radio Technical Commission for Aeronautics ("**RTCA**") in North America) which will be issued for application in the form of a UK Technical Standards Order (TSO). UK TSOs are used to approve articles (equipment) for use in the UK in accordance with Subpart O of Annex 1 to Regulation (EU) No. 748/2012 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances. Based on information provided by the HTAWS manufacturers, this new standard can be met with effect from 1 January 2025.

It has been demonstrated through the analysis of aircraft flight data that the adoption of the new Offshore HTAWS standards could have prevented the four above-mentioned CFIT/LOC-I accidents, and the AAIB has recommended that this new standard should be implemented for specified helicopters operating offshore – see below:

Note: Medium/large helicopters are delineated by maximum certificated take-off weight (>3175 kg) and maximum operational passenger seating capacity (>9).

What legal powers are being used to achieve the change?

Article 31 of Regulation (EU) 2018/1139 ("**the UK Basic Regulation**") as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018.

Consequence of not making these legislative changes

Medium/large helicopters operating offshore will not be required to implement enhanced technical standards for HTAWS and will consequently fail to adequately mitigate the risk of continued and unnecessary exposure to CFIT and LOC-I accidents and the associated loss of life, personal injury and costs.

A failure to implement a legislative change will also result in the CAA not addressing specific Safety Recommendations issued by the UK's AAIB; AAIB's purpose is to improve aviation safety by

determining the circumstances and causes of air accidents and serious incidents and promoting action to prevent reoccurrence.

The anticipated cost of complying with the proposed mandate (£1.4m) is less than the value of preventing a single fatality (£2.2m) as published by DfT in the Transport Analysis Guidance Data Book. The historical accidents that could have been prevented accounted for 22 lives and the total loss of four aircraft.

Affected Law (and, if Applicable, UK AMC)

What is the existing UK legal framework which is relevant here?	UK Regulation (EU) No. 965/2012
Identify the law that is being changed	UK Regulation (EU) No. 965/2012 Annex V, Sub-Part K, Helicopter Offshore Operations, Part SPA.HOFO.160(c) Equipment Requirements Helicopter Terrain Awareness Warning Systems (HTAWS).
Are any consequential amendments needed to other pieces of law?	No
If the change proposed is to retained EU Implementing Rules made under the UK Basic Regulation is there any UK Acceptable Means of Compliance ("AMC"), Guidance Material ("GM") or Certification Specification ("CS") that will be changed/newly adopted as a consequence?	AMC1.SPA.HOFO.160(c) GM1.SPA.HOFO.160(c) CS-ETSO
Does this proposal relate to an international treaty obligation (e.g. an ICAO SARP)?	No
Is a consultation required?	Focussed consultations have been conducted with affected aircraft and equipment manufacturers and helicopter offshore operators.
Is an Impact Assessment under the Better Regulation Framework necessary?	A De Minimis Impact Assessment has been undertaken.
When is it intended that these provisions should be brought into force?	The new regulation should come into force immediately to ensure the current requirements continue pending the new requirement taking effect from 1 January 2025.
Has an SI "slot" been agreed with DfT?	November 2022
Will there be any criminal offences?	The Department for Transport is considering whether to seek a legislative opportunity to take powers for the Secretary of State to make a breach of requirements of retained EU legislation in the field of civil aviation an offence. If such powers are agreed by Parliament in the future, then consideration will be given to whether any additional criminal offences would be appropriate.
If so, is a Justice Impact Test required?	If the power to impose criminal sanctions is granted, the question of a Justice Impact Test will be considered by the CAA in collaboration with the Department for Transport.

What is the intended extent of the provision?	The UK
Are there any devolved issues?	No
Are any transitional provisions needed?	No

Suggested Changes to existing wording of Law

As set out above, the substance of the amendments detailed below have already been the subject of consultation. These proposals are therefore published for information purposes only. It should be noted that the amendments set out in this section constitute the CAA's initial opinion on possible amendments to the relevant legislation. While it is anticipated that any amendments ultimately enacted will broadly reflect the CAA's proposals, all amendments to legislation are subject to an iterative legislation drafting process by Government lawyers. The proposals set out below may therefore not be the final wording in the UK law.

The objectives of the changes are to:

- Extend the current requirement for HTAWS to include existing medium/large HTAWS-equipped helicopters, in addition to those first issued with an individual C of A after 31 December 2018.
- Modify the requirement to specify that the HTAWS should be "configured for offshore operations as specified in an acceptable standard".

Point 1 will enable a specified standard to be applied to all existing HTAWS-equipped helicopters. Point 2 will allow the enhanced standards to be specified via the associated AMC with effect from 1 January 2025.

Suggested changes to UK Regulation (EU) No. 965/2012 Annex V, Sub-Part K, Helicopter Offshore Operations, Part SPA.HOFO.160 (c):

Replace current Part SPA.HOFO.160(c) with the following text in italics:

(c) Helicopter terrain awareness and warning system (HTAWS)

(1) Helicopters used in CAT operations with a maximum certificated take-off mass of more than 3175 kg or a MOPSC of more than 9 and first issued with an individual C of A after 31 December 2018 shall be equipped with an HTAWS that provides classic mode functionality and meets an acceptable standard, and

(2) From 1 January 2025 helicopters used in CAT operations with a maximum certificated take-off mass of more than 3175 kg or a MOPSC of more than 9 and first issued with an individual C of A after 31 December 1999 shall be equipped with an HTAWS configured for offshore operations as specified in an acceptable standard.

Paragraph 1 above provides for the continuation of the current rule until the new rule takes effect on 1 January 2025. Paragraph 2 introduces the new requirement applicable to all medium/large HTAWS-equipped helicopters with effect from 1 January 2025.