

Background

This document has been published in order to highlight proposed significant changes in edition 22 of CAP 403. It does not include minor changes / corrections to previous text. The aim is make the consultation process easier and less time consuming by providing an alternative to reading through the entire CAP in order to find proposed changes. The full draft version of edition 22 of CAP 403 has also been offered for consultation for those who prefer to view the complete document and for context if required for those who chose to use this document.

All proposed amendments are underlined in red.

Revision History

Edition 22

Amendments include: change to symposium attendance requirements, the creation of a new Appendix containing useful links as previously included throughout the CAP, clarification that all references to 'pilot' in this CAP apply to 'pilot-in-command', revised criteria for the use of a CAA LTP, revised Appendix A risk assessment guidance, introduction of the definition of 'stable flight', introduction of the term and definition of SQEP and revised methodology for the use of minimum lateral separation distances between display aircraft and crowd line.

Terminology and Definitions

Display Pilot ¹	A pilot who holds a Display Authorisation (DA) or DA Exemption, issued by their National Aviation Authority, or an appropriate military Public Display Authority (PDA), or military Exemption, which allows them to participate in a Flying Display.
	r lying Display.

Stable flight Refers to an aircraft maintaining a predictable and controlled state.

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¹ For multi crew aircraft, it is the 'pilot-in-command' to which the term 'pilot' refers to throughout this CAP.



Suitably QualifiedSQEPand ExperiencedPerson	Someone with the qualifications and experience to fulfil the responsibilities of a specific role competently.
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General information

HF in Air Displays

To ensure HF in air display experiences, insights and best practice are continued to be exposed to the wider display community:

- a) by DS25, FDDs shall ensure they attend a minimum of one <u>Pre-Display</u> <u>Season</u> Symposia every <u>4</u> years²
- b) AFDDs, DA holders and DAEs **shall** continue to have HF discussed at their respective DA Evaluations
- c) AFDDs, DA holders and DAEs **shall** continue to ensure they attend a minimum of one <u>Pre-Display Season</u> Symposia every <u>4</u> years

Chapter 1 – Flying Display legal requirements

Long term Permissions (LTP) for display practice

- 1.7 A CAA Permission is required for any display practice carried out in noncompliance with SERA and the Rules of the Air Regulations. Permissions issued for this purpose are usually issued for a period of 12 months and are location specific. Applications are to be made using the process and applicable requirements set out in chapter 2 and **must** contain:
 - a) A <u>current</u> colour 1:50,000 scale Ordnance Survey map extract
 - b) A list of participating aircraft (when applicable / known)
 - c) A risk assessment <u>covering the location and expected ground</u> <u>footprint of any practice area³. Risk assessments must be carried</u>

² By DS25 FDDs **must** have attended at least 1 Display Symposium

³ Guidance on the production of a suitable risk assessment can be found at Appendix A.



out by a CAA accredited / appointed person (i.e. FDD / DAE) or the airfield's accountable manager.

- 1.8 A LTP for display practice may be used by pilots to practice within the privileges and scope of a valid DA.
- 1.9 Pilots seeking an initial issue DA, or an upgrade to an existing DA, <u>shall</u> only use the LTP for display practice following an appropriate briefing <u>and</u> <u>authorisation from their DAE.</u>
- 1.10 Use of a LTP for display practice requires the authorisation of the <u>Permission holder</u>.
- 1.11 No persons other than minimum crew, as detailed in the aircraft Certificate of Airworthiness or Permit to Fly (or equivalent), are permitted onboard a civilian registered aircraft during any flight made pursuant to a LTP except for the carriage of their DAE when conducting DA training or evaluation.
- 1.12 <u>The Permission holder **shall** maintain</u> records of each flight conducted pursuant to the LTP.
- 1.13 DAEs **shall** record details of each flight authorised by them made pursuant to a LTP.

Chapter 4 - Personnel

Flying Control Committee (FCC)

4.12 The FCC is appointed by the FDD and **should** consist of <u>SQEP</u> with relevant experience on the categories of aircraft being flown at the Flying Display. The FCC **may** be supplemented by other suitably experienced persons. Additionally, some members of the FCC **should** hold, or have held, a UK DA or UK PDA.

Flight crew

4.15 Formation leaders are responsible for ensuring the safe conduct of their formation and **must** ensure that the pilots in the formation are <u>SQEP</u> and



that formation flying activity is comprehensively briefed. Details regard in Civil Aviation pilot qualification, currency and permissible formation flight can be found in CAP 1724.

Chapter 5 – The Flying Display – planning and categorisation

Hazardous materials

5.25 Information of hazardous materials **must** be <u>provided to the FDD prior to</u> <u>the display.</u> Form <u>SRG 1327</u>: Pilots Certified Declaration for Submission to the Flying Display Director, or any alternative method preferred by the FDD, **may** be used for this purpose.

Separation Distances

- 5.35 Aircraft are not permitted to display above any point on the surface closer to any area occupied by spectators or their vehicles than that specified in the following tables as appropriate to the display speed <u>and weight</u> of the aircraft. For aircraft flying in formation, the distances are applicable to the aircraft performing nearest to the Crowd Line.
- 5.36 <u>Where a formation consists of aircraft types that would otherwise be</u> permitted to use different separation distances, the formation leader **must** ensure that at all times the aircraft closest to the crowd line maintains the most restrictive separation distance.
- 5.37 The speeds given in the tables below are the speeds of the aircraft at any particular time during the display. The pilot **may** use the separation distance appropriate to the speed of the aircraft at the time of each manoeuvre / pass.
- 5.38 Display pilots **must** notify the FDD in advance of the lateral separation distance they intend to use during their display. Form SRG1327 **may** be used for this purpose.
- 5.39 The FDD is responsible for assessing whether or not operation to a permitted Separation Distance is appropriate to the specific venue,



therefore, operation to a permitted Separation Distance requires the prior agreement of the FDD.

5.40 The minimum lateral Separation Distances between display aircraft and Crowd Line are as follows:

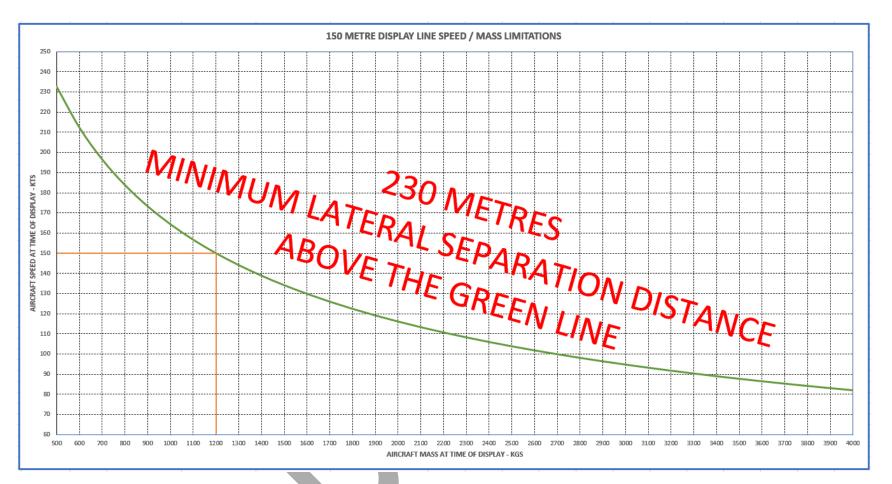
Type of aircraft	Type of display	Separation distance
All aircraft	<u>All displays</u>	230 metres
All aircraft	Speed greater than 300KIAS with velocity vector towards crowd	450 metres

For the following aircraft and activities, reduced minimum separations are permitted:



Type of aircraft		Type of disp	ay	Separation distance
<u>All fixed wing</u> <u>displays</u>	Refer to 150 metre speed / mass limitations graph		150 <u>/ 230</u> metres	
Rotary-wing	Non-aerobatic flight and under-slung load operations		150 metres	
VSTOL Aircraft	Vertical take-off and landing, and non- wing borne flight at low speed		150 metres	
VSTOL Aircraft	Conventional wing borne flight <u>Refer to 150 metre speed / mass</u> <u>limitations graph</u>		<u>150 /</u> 230 metres	
<u>Type of aircraft</u>	<u>Type of</u> <u>display</u>	<u>Maximum</u> height inside 150 metres	Maximum on-crowd wind component inside 150 metres	Separation distance
Light Aircraft (mass less than 1200kg and maximum speed 100KIAS (at time of display)	<u>Non-</u> aerobatic	<u>200 feet</u>	<u>10 kts</u>	<u>75 metres</u>
Inside 150 metres 1) When turning onto, or parallel to the 75m line, the maximum permitted bank angle is 45 degrees.				
 Height-gaining manoeuvres with any on crowd vector must not be performed. 				

Use of the 75m line is not permitted at any Flying Display where the minimum height stated on the CAA Permission is 200 feet AGL or higher.



5.41 The graph shows a line of constant kinetic energy equivalent to a 1200kg aircraft flying at 150kt. Displays involving combinations of mass and speed under the line **may** use a lateral separation distance of 150m, subject to FDD agreement. Displays involving combinations of mass and speed that are above the line **must** use a lateral separation distance of not less than 230m.

Civil Aviatio



Chapter 6 – The Flying Display - Management

6.38 **Too High Call**. A 'Too High' call should be used when an aircraft <u>is inside</u> <u>150 metres in accordance with the table in Chapter 5 and</u> is too high.

Chapter 8 – Flying Display Director (FDD) – Requirements and information

Military participation

8.25 All military participation at a Flying Display, including Role Demonstrations and Military Flypasts, **must** be included as one of the display items on any CAA Permission and **must** perform within that Permission's time window.

Parachute, paraglider, paramotor, hang-glider and foot-launched aircraft participation

- 8.35 Aircraft landing or taking off, other aircraft with engines running and propellers or rotors turning constitute a hazard to these display items. In order to minimise the risks FDDs shall ensure that the following procedures are followed:
 - a) All pilots shall be briefed on the procedures to be followed during any display involving these Display Items.
 - b) Propellers, jet engines or helicopter rotors must not be turning <u>anywhere at the display location</u> during the period that they are operating.

Post display feedback

8.50 FDDs / AFDDs must submit a Post Display Feedback Report using the joint CAA / MAA 'Flying Display Director Post Display Feedback Form' SRG1305 / Form 4 within five days of the conclusion of the Flying Display



Chapter 12 – Paragliders, Hang-gliders and powered variants as part of a Flying Display

The Landing Area

- 12.11 <u>For paragliders (not under power),</u> where the designated landing area is on the display side of the Crowd Line, no part of that area **shall** be closer than 30 metres to the Crowd Line parallel to the approach.
- 12.12 For hang-gliders, powered hang-gliders and powered paragliders (paramotors) with the engine running, where the designated landing area is on the display side of the Crowd Line, no part of that area shall be closer than 50 metres to the Crowd Line parallel to the approach.
- 12.14 For paragliders (not under power), where the designated landing area is adjacent to an area set aside for Spectators, it **must** be enclosed with rope, tape or fencing. In this case, the minimum designated landing area **shall** have a minimum of 60 metres available for landing into wind with at least 30 metres laterally. In addition to the 30 metre x 60 metre landing area there **must** be a minimum lateral separation distance of 30 metres in all directions from any Spectators.
- 12.15 For hang-gliders, powered hang-gliders and powered paragliders (paramotors) with the engine running, the minium designated landing area shall have a minimum of 100 metres available for landing into wind with at least 50 metres laterally. In addition to the 50 metre x 100 metre landing area, there must be be a minimum lateral separation of 50 metres in all directions from any spectators.

Separation Distances

12.23 Minimum Separation Distances for paragliders, paramotors, hang-gliders and SPHGs are contained in the table below:



Type of display	Lateral Separation Distance
Take-Off	30 metres
Landing (without power)	<u>30 metres</u>
Landing (engine	50 metres
<u>running)</u>	
Non-aerobatic	75 metres
Full Aerobatic*	150 metres

* Full aerobatic flight for these aircraft include, but are not limited to, angles of bank exceeding 90 degrees, spins, loops, inverted flight, figures in which all or part of the aircraft is moving backwards or rotating and manoeuvres in which <u>a paraglider canopy is not fully inflated</u>.

Appendix A – Risk Assessment

Why is risk management important?

A5 Displaying aircraft close to the ground and / or large numbers of people has inherent <u>safety</u> risks. Risk management should be focussed on identifying the hazards and then minimising the resultant <u>safety</u> risks so that the <u>likelihood</u> of an incident is reduced and the <u>subsequent</u> consequences minimised. A FDD, AFDD or Pilot should understand the <u>safety risks</u> associated with the activity being undertaken, in the location it is being carried out, in order to identify the key components in effective <u>safety</u> risk management.

The risk management process

A9 Risk Assessments <u>must</u> cover all people associated with a Flying
 Display, including pilots, staff and volunteers, and members of the public
 both inside and outside of the event. In general, the purpose of the Risk



Assessment is to determine the <u>safety</u> risk posed to people and how that <u>safety</u> risk is mitigated to an acceptable level.

Hazard / risk definition

- A13 A hazard is defined as <u>a condition, object or activity with the potential of</u> <u>causing injuries to personnel, damage to equipment or structures, loss of</u> <u>material or reduction of ability to perform a prescribed function</u>.
 - A14 A risk is defined as a combination of the likelihood of a hazard occurring and the severity of the accident⁴ that could result, i.e. <u>a high likelihood</u> <u>and / or a high severity consequence will lead to a higher Risk</u> <u>Assessment</u>.

Hazard identification

- A17 Hazard identification is fundamental to effective Flying Display <u>safety</u> risk management and the task <u>should be approached</u> formally.
- A19 All hazards identified during the Risk Assessment process, including any hazards identified but deemed not applicable, <u>must be recorded</u>. This information **may** be requested by the CAA GAU during the approval process of a Flying Display or Special Event Permission or by other agencies if required.
- A20 Examples of <u>safety considerations to be taken into account at</u> Flying Displays include:
 - a) Hazardous materials carried by aircraft
 - b) Congested Areas in the vicinity of a Display Area
 - c) Electricity pylons
 - d) Displaying and non-displaying aircraft

⁴ Accident as defined in CAP 760.



- e) Human Factor influences
- f) Sources of visual confusion
- g) Major and minor roads
- h) Public footpaths and rights of way
- i) Potential areas of congregation of secondary spectators
- j) Occupied properties
- k) Display location topography

Risk Assessment

- A22 A risk assessment process starts with defining the <u>safety</u> risk(s) associated with the hazard(s) previously identified. There might be more than one <u>safety</u> risk associated with a particular hazard and a Risk Assessment **may** need to be conducted for each <u>safety</u> risk <u>version</u>.
- A23 The next step is to assess the <u>safety</u> risks in terms of likelihood and severity. Note that the initial Risk Assessment **should** assume that all legal requirements and good practice guidelines contained within CAP 403 are already being met, <u>unless there is cause to believe they may</u> not be. In the latter case action **should** be considered to restore that <u>situation</u>.

Risk rating categories

A33 **Unacceptable:** The likelihood and / or severity of the consequence is intolerable. The Flying Display **must not** proceed as planned; the planned display items and their routines **may** be reviewed at this point to reduce the <u>safety</u> risk category. If it remains Unacceptable, mitigation measures to reduce the <u>safety</u> risk must be implemented in order to control the <u>safety</u> risk to ALARP and to (at least) the Review category. If,



after reducing the <u>safety</u> risk to ALARP it is still Unacceptable the activity **must not** take place as planned.

- A34 **Review:** The severity and / or likelihood is of concern and the <u>safety</u> risk must be further mitigated. If, after mitigating the <u>safety</u> risk to ALARP, the <u>safety</u> risk remains in the review category the FDD must consider the benefit of continuing with the flying display versus the residual <u>safety</u> risk. If the benefit outweighs the <u>safety</u> risk, then the FDD may consider the <u>safety</u> risk tolerable and accept it. If the benefit doesn't outweigh the <u>safety</u> risk, or the FDD doesn't consider the <u>safety</u> risk tolerable then, by default, it becomes Unacceptable and the activity, as planned, **must not** go ahead.
 - a) Review decisions should be made in consultation with the EO as the overall <u>safety</u> risk owner for the event.
 - b) Review decisions must be appropriately recorded.
- A35 Acceptable: The consequence is so unlikely, or not severe enough to be of significant concern and the FDD considers the <u>safety</u> risk <u>Acceptable</u>.
 However, a <u>safety</u> risk being Acceptable does not <u>necessarily</u> mean it is ALARP; all <u>safety</u> risks should be reduced to ALARP to minimise the <u>safety</u> risk to both pilots and the public.
- A36 For all <u>safety</u> risk categories, mitigating a <u>safety</u> risk to ALARP does not alone make it Acceptable or tolerable. The FDD, along with other interested parties such as the EO and pilots, must judge whether an activity is appropriate or <u>if the safety risks have</u> not <u>been</u> properly considered, assessed and <u>categorised</u> as per the guidance above.

Risk mitigation

A37 Mitigation measures are actions, such as changes to operating procedures, equipment or infrastructure that reduce the <u>likelihood and / or</u> <u>the severity</u>.



- A38 The FDD should always seek to reduce <u>safety</u> risks to ALARP, regardless of whether they are assessed as Acceptable or Review <u>(tolerable)</u>. By doing so, they will ensure that all <u>safety</u> risks to both pilots and the public are ALARP.
- A39 As with hazard identification, defining appropriate mitigations **should** be approached formally and similar methods used.
- A40 Generally, risk mitigation strategies fall into three categories:
 - a) **Avoidance**. The operation or activity is cancelled or avoided because the safety risk exceeds the benefits of continuing the activity, thereby eliminating the risk entirely
 - b) **Reduction**. Action is taken to reduce the likelihood of the safety risk occurring, e.g. by improving risk control measures or the frequency of the operation or activity is reduced, or action is taken to reduce the magnitude of the consequences of the safety risk
 - c) Segregation. Action is taken to isolate the effects of the consequences of the <u>safety</u> risk or build in redundancy to protect against them

Risk Recording

- A43 The process used to identify mitigations **must** be recorded along with the mitigations to be implemented. Any mitigations that have been considered, but discounted due to excessive time, money or resource, **must** also be recorded.
- A44 The <u>safety</u> risk recording process includes a reassessment of the <u>safety</u> risk <u>category</u> if the planned mitigations are put in place. The reasons why the mitigating actions affect the final severity and likelihood scores <u>must</u> be recorded.

Flying Display Risk Assessment

A47 The <u>FDD **should** ensure that</u> appropriately <u>SQEP individuals</u> are involved in the production of a Flying Display Risk Assessment.



- A48 The Flying Display Risk Assessment is a working document and **must** be reviewed regularly, by <u>SQEP</u>, especially during any safety and Flying Control Committee meetings.
- A53 The Flying Display Risk Assessment **must** be reviewed after the event by <u>SQEP</u> to determine what was managed well and to identify areas where improvements could be made. Findings **must** be recorded such that they are accessible for future events.
- A57 Consideration **must** also be given in every Risk Assessment to the potential outcome of the hazards identified on any Spectators, Secondary Spectators and the wider general public.

Appendix C – Flying Display Accreditation

FDD Currency

C7 To maintain currency an individual **must** act as FDD within the appropriate tier at least once every two years. However, if, for example, a tier 3 FDD has only acted as FDD for a tier 1 or 2 Flying Display(s) within the currency period, the tier 3 privileges will be forfeited at the end of the currency period. Similarly, where a FDD is Civ / Mil accredited, unless both types of regulated event have been directed, the type not directed will be forfeited at the end of the currency period.

Flying Display Symposia

C12 FDDs must attend a <u>Pre-Display Season</u> Symposium at least once every <u>4</u> years⁵. FDD accreditation will only be renewed where this requirement is met.

⁵ Initial FDD holders **mus**t attend a Display Symposium within the first 12 months of point of issue.



Appendix E

Useful Links

Forms	
Aircraft Display Item Schedule	Aircraft Display Item schedule
Airspace Co-ordination and Obstacle Management form	Airspace Co-ordination and Obstacle Management
Flying Display and Special Event or Unusual Aerial Activity application form	Apply
OfW586a: Aeronautical ground station radio licence application form	<u>OfW586a</u>
RA 2335 Form 1: Flying Display Notification Form	RA 2335 Form 1
RA 2335 Form 4: Flying Display Director Post Event Feedback Form	Form 4
SRG 1303B: Application for fitness assessment for a flying display role	<u>SRG 1303B</u>
SRG 1303T: Flying Display Risk Assessment Template	<u>SRG 1303T</u>
SRG 1305: Flying Display Director Post-Event Feedback	SRG 1305
SRG 1327: Pilots Certified Declaration for Submission to the Flying Display Director	<u>SRG 1327</u>
SRG 1328: UK DA Exemption Application	<u>SRG 1328</u>
SRG 1330: Airborne Flying Display Director Checklist	<u>SRG 1330</u>
SRG 1411B: Application for the inclusion, renewal or cancellation of Unit Endorsements in an ATCO Licence	<u>SRG 1411B</u>
SRG 1413A: Application for Flying Display Director (FDD) Restricted Radio Operator's Certificate of Competence	<u>SRG 1413A</u>
SRG 1413B: Declaration by Flying Display Director	<u>SRG 1413B</u>
SRG 1414: Flight Information Service Officer licensing	<u>SRG 1414</u>
SRG 2003: Application for a Temporary Aerodrome Licence	<u>SRG 2003</u>
Publications	
Aeronautical Information Circulars	AICs



Air Navigation Order 2016 (as amended)	ANO
CAA Safety Notice SN-2018/001	<u>SN-2018/001</u>
CAP 1032: Aerodrome Flight Information Service Officer Licensing	<u>CAP 1032</u>
CAP 168: Licensing of Aerodromes	<u>CAP 168</u>
CAP 1694: Human Factors in Air Displays	<u>CAP 1694</u>
CAP 1724: Flying Display Pilot Authorisation and Evaluation: Requirements and Guidance	<u>CAP 1724</u>
CAP 1789A: Unmanned Aircraft Systems	CAP 1789A
CAP 2331: Air Traffic Controllers – Licensing and Training	CAP 2331
CAP 413: Radiotelephony Manual	<u>CAP 413</u>
CAP 452: Aeronautical Radio Station Operator's Guide	<u>CAP 452</u>
CAP 452: SA 2023/01: Restricted ROCC - Flying Display Director (FDD)	CAP 452 SA 2023/01
CAP 632: Operation of 'Permit-to-Fly' ex-military aircraft on the UK register	<u>CAP 632</u>
CAP 660: Parachuting	<u>CAP 660</u>
CAP 670: Air Traffic Services Safety Requirements	CAP 670
CAP 719: Fundamental Human Factors Concepts	<u>CAP 719</u>
CAP 722: Unmanned Aircraft System Operations in UK Airspace - Guidance	<u>CAP 722</u>
CAP 737: Flight Crew Human Factors Handbook	<u>CAP 737</u>
CAP 760: Guidance on the Conduct of Hazard Identification, Risk Assessment and the Production of Safety Cases: For Aerodrome Operators and Air Traffic Service Providers	<u>CAP 760</u>
CAP 774: UK Flight Information Services	<u>CAP 774</u>
CAP 793: Safe Operating Practices at Unlicensed Aerodromes	<u>CAP 793</u>
CAP 797: Flight Information Service Officer Manual	<u>CAP 797</u>
NATS Human Factors in Flying Displays	Human Factors in Flying Displays
ORS 4 No.1249: General Exemption for Foreign Registered Home-Built Aircraft and Certain Historic Aircraft	<u>ORS 4 No.1249</u>



ORS 4 No.1524: Exemption for Certain French Registered Aircraft not possessing ICAO Compliant Certificates of Airworthiness	<u>ORS 4 No.1524</u>
ORS 4 No.1611: Balloon Pilots – Flying Displays	<u>ORS 4 No.1611</u>
ORS 5 CAA Schemes of charges	<u>ORS 5</u>
Regulatory Article (RA) 2335	<u>RA 2335</u>
Standardised European Rules of the Air	<u>SERA</u>
Contacts	
British Hang-Gliding and Paragliding Association	office@bhpa.co.uk
British Skydiving	info@britishskydiving.org
CAA Airspace Regulation (Utilisation)	AROps@caa.co.uk
CAA Airspace, ATM & Aerodromes	Aerodromes.ATM@caa.co.uk
CAA Applications and Approvals Department.	aanda@caa.co.uk
CAA GAU	ga@caa.co.uk
CAA RPAS Unit.	uavenquiries@caa.co.uk
Military Aviation Authority	DSA-MAA-Display@mod.gov.uk
Ofcom	spectrum.licensing@ofcom.org.uk
Reporting	
CAA Air Display HF repository	Repository for HF material
CAA Aviation Reporting Portal	Occurrence Reporting
CAA make a report or complaint	Reports or complaints
Confidential Human Factors Incident Reporting Programme	CHIRP
References	
Air Accidents Investigation Branch	AAIB
Baines Simmons	FAIR
British Hang-Gliding and Paragliding Association	BHPA
British Parachute Association	BPA



CAA Accredited FDD list (CAA Website)	FDDs
CAA drone registration website	Register drones
CAA Drones website	<u>Drones</u>
CAA Flying Display Director Accreditation website.	FDD Accreditation
CAA General Aviation Unit (GAU) website	GAU
CAA HF strategy	HF Strategy
CAA Human factors in air displays	Human factors in air displays
Events Industry Forum (EIF) Event Safety Guide	Purple Guide
Maritime & Coastguard Agency	Maritime & Coastguard Agency
Met Office Fire Severity Index	<u>FSI</u>
National Farmers' Union	<u>NFU</u>
National Health Service	NHS England
ProtectUK website.	ProtectUK
Red Cross	Red Cross
Royal National Lifeboat Institution	RNLI
St John Ambulance	<u>SJA</u>