# Foreword

By Derek Twigg MP Parliamentary Under-Secretary of State for Defence and Minister for Veterans

As our servicemen and women deploy around the world in support of military campaigns to deliver peace and stability, their professionalism and commitment is held in the highest regard. Fundamental to the success of their work, lies not only with ensuring that they are provided with the right equipment and support, but also, rigorous, effective and relevant training regimes. Low level flying is an essential and demanding skill that the Army, Navy and RAF aircrew must rehearse, develop and refine prior to a deployment in order to meet the requirements of their operational role. Both fixed-wing and helicopter crews require this training and regularly conduct low-level flights on current operations. This enables the aircraft, the aircrew and their passengers to operate effectively and, critically, as safely as possible. Acquiring and maintaining this skill requires constant practice and is crucial to ensure that the aircrew are fully prepared for the challenges they face, often in difficult and dangerous conditions.



It is acknowledged that low flying training may cause disturbance for the public. Every effort though is made to minimise the effects on the general public by distributing this essential training across as wide an area of the UK as possible – minimum disturbance for the maximum amount of people. As in every walk of life, there are constant demands on limited resources (airspace) and the military constantly works with civilian organisations to ensure that the training areas within the UK continue to meet their requirements without losing sight of the needs and expectations of others. Many will be aware of the extensive and ongoing work that has been jointly undertaken with the British Horse Society to promote equestrian safety; this has proved a fruitful and positive engagement. There is also close liaison between a number of other organisations, such as the National Parks Associations, English Nature, and Scottish National Heritage and at the local level organisations such as County Planners and representatives of the National Farmers Union. Similarly, by working closely with wind farm developers a considerable commitment has been made to achieve an effective balance between energy provision and the preservation of areas for low level training.

A question often raised is whether low-flying training can be undertaken overseas. While some of the training is undertaken on exercises overseas, this inevitably comes at a cost. There is a fine balance between cost effectiveness, additional demands (time –away) being placed on heavily tasked personnel, training requirements and public concerns over noise management. Simulation is another area that is being constantly reviewed and with further fidelity enhancements there may be scope to increase the number of training hours undertaken in simulators in the future.

This report is the latest in a series that reviews the pattern of low flying by military aircraft across the United Kingdom. It explains in further detail why our Armed Forces need to undertake this training, how much they do, and where it is carried out. It is an open report on low flying training and re-iterates the commitment to ensure that the right balance is achieved between the requirements of the community and the provision of fully-trained armed forces, ready to meet operational commitments.





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Map of UK Low Flying System







## **SUMMARY**

1. This report by the Ministry of Defence enables Parliamentary and public scrutiny of levels of low flying training by both fixed and rotary wing (helicopters) aircraft across the UK. This report covers the training year 1 April 2007 to 31 March 2008.

2. The ability to fly at low level is a highly perishable skill and regular training and practice enables aircrew to maintain their currency in the skill in order that they may be deployed to operational theatres at short notice. Current operations underline that military low flying remains an essential skill used by aircrew flying aircraft in a variety of roles. We seek to distribute this training activity as widely as possible across the United Kingdom in an attempt to minimise the impact that it has on the wider community. In practice, however, military aircraft avoid major centres of population, areas with civil airspace restrictions, some industrial sites and conservation areas.



3. In 2003 the Ministry of Defence reviewed its policy of military low flying and in particular the requirement for low level flying training by helicopters. The Review (the outcome of which was published separately) concluded that there is an enduring need for such training and that only the minimum necessary to maintain operational readiness is conducted. Following the Review changes were made to the way in which such training is conducted, and communication of this activity with the public was improved. The Ministry of Defence continues to work closely with a wide variety of interest groups to reduce the potential impact of low flying.

4. Controls are in place to regulate both the amount of low flying training that takes place each year and how it is conducted. Before entering the low flying system aircrew are required to make a booking with the Low Flying Operations Squadron and state which Low Flying Area(s) they will be using, and for what period of time. This allows the Low Flying Operations Squadron to monitor the number of aircraft operating in a given area and, if necessary, to limit traffic levels, and serves both to promote safety and reduce the level of disturbance to members of the public.

5. The number of hours booked for low flying training during the training year 2007/2008 (excluding activity in Dedicated User Areas) is shown below. Figures for the previous year are shown for comparison.

	Fixed Wing	Rotary Wing	Total
2007-2008	20,441	17,354	37,795
2006-2007	21,553	16,164	37,717
2005-2006	26,321	18,109	44,430

6. Overall, the figures show a small increase on last year's total; although fixed wing booked low flying hours have reduced, the hours for rotary wing have increased by slightly more than this reduction. For fixed-wing aircraft, the Jaguar has been retired from service and the new Typhoon is operating mainly in the Air Defence



role; therefore there is currently very little Typhoon low level activity. In due course Typhoon will undertake the offensive, and when this role commences there will be a corresponding increase in the low level training requirement. In addition, current operations in Afghanistan require much Close Air Support of ground forces to be conducted from medium rather than low level. Consequently, whilst some Close Air Support training has continued at low level, the immediate requirement for medium level training has further reduced low level training hours. The current reduction of fixed wing low flying is therefore temporary, and due to this unique combination of events.

# Introduction

1. The requirement for low level flying by military aircraft has existed from the earliest days of military aviation. Limitations of the technology of the aircraft in the early days of military aviation meant that aircraft could only fly at relatively low levels. However, rapid advances in aircraft design in the early part of the 20<sup>th</sup> Century enabled flight at much higher altitudes. During the First World War although aircraft were able to fly and fight at higher levels, they were largely required to provide support for ground troops, particularly so during the latter stages of the war. Following the First World War, and during the Second World War, the Royal Air Force developed other skills including reconnaissance, ground attack, close air support and the need to dominate the airspace immediately above the battlefield.

2. In the 1950s and 1960s, developments in radar-assisted anti-aircraft weapons systems meant that aircrew had to develop tactics that would enable them to minimise their exposure to detection and tracking. Flying at medium and high altitudes did not offer protection against the new range of defences of the Soviet Union including advanced interceptors and surface-to-air missiles. The Royal Air Force, therefore, adopted low level tactics as a means to evade, or delay detection by enemy radar and artillery or missile systems. Even today when conducting medium or high level operational flying, aircrew must be able to safely execute a defence against either an air-to-air or surface-to-air threat, by descending rapidly to, and remaining in, a low level environment.





# **The UK Low Flying System**

#### Low Flying Today

3. Aircrew of the British Armed Forces have been regularly deployed to troubled areas around the world, sometimes with little or no warning. They are required to undertake a variety of roles including reconnaissance, offensive or defensive operations, search and rescue, transporting troops and their equipment, or the delivery of humanitarian aid to remote locations. It is essential that the aircrew must be able to fulfil the task as effectively as possible, often without time for "work-up" training.

4. Continuing operations in Iraq and Afghanistan have seen aircrew of both fixed and rotary wing aircraft undertaking operations at low level. They are only able to do this through specialist training gained through the use of the UK Low Flying System (UKLFS).

#### **The Need To Train**

5. The ability to fly at low level is unquestionably a demanding skill, and places significant pressures on aircrew in operational situations. To be able to perform this over a variety of different terrain requires constant practice. It takes time to build up the skill and if not practiced regularly, competence levels degrade quickly. Simulation is used as much as possible for training aircrew. For example, nearly 50% of conversion-to-type training in the Apache helicopter is completed using simulation. However, limitations in the fidelity of the simulation and the inability to rehearse the complex interaction between crew members and ground forces means that low flying training across the United Kingdom is required for the foreseeable future.



#### Policy

6. In the United Kingdom, military fixed wing aircraft are considered to be low flying when they are flying below 2000ft. Helicopters and propeller driven light aircraft are regarded as low flying when operating below 500ft. Fixed wing aircraft (except propeller driven light aircraft) are required to keep a strict minimum separation distance (msd) of 250ft between the aircraft and the ground or any other object (trees, electricity pylons etc). For less experienced aircrew this is increased to 500ft (msd). The Ministry of Defence authorizes a small amount of low flying by fixed wing aircraft between 250ft (msd) and 100ft(msd), referred to as Operational Low Flying (see paragraph 36 for further details) but this is restricted to three designated Tactical Training Areas (TTAs) and which are described in further detail at paragraph 13. As a result of the review of helicopter low flying training in 2005 the normal minimum operating height for helicopters is now 100ft (above ground level) however, they are permitted to operate at lower heights (and down to ground level) under certain circumstances.

7. The policy and regulation of all military low flying in the UK is controlled by the Directorate of Air Staff (DAS) in the Ministry of Defence, London, and administered by the Low Flying Operations Squadron based at



RAF Wittering. Users of the low flying system must make a booking with Low Flying Booking Cell (LFBC), (part of the Low Flying Operations Squadron) in advance of using the system (hence the reference to "booked low flying" in the body of this publication).

#### The Shape Of The System

8. Military low flying training takes place throughout the United Kingdom so that an equitable spread of activity across the country is achieved as far as possible. In theory all of the UK is available for this but, of course, a number of factors are taken into account. There are fourteen major avoidance areas on the UK mainland, the majority of which are areas of controlled airspace around major airports and major built up areas. Towns with a population of more than 10,000 people are also avoided and in light of the results of the 2001 Census, additional urban avoidance areas were added. Other parts of the country have airspace restrictions – civil airspace around airfields, hospitals and other sensitive areas.



9. Anyone is able to apply for an avoidance area, and all requests receive serious consideration. Avoidance areas are approved at the Ministry of Defence by DAS. While individual requests may seem undemanding, it would be impossible to meet training objectives if all of the requests for avoidances received each year were acceded to. In addition, the creation of new avoidances further restricts the space available for low flying training, and can have flight safety implications or have the effect of concentrating activity at other locations. This conflicts with the aim to spread low flying as widely as possible across the UK in order to minimise disturbance in any one area. Therefore, new avoidances are only approved in the most exceptional circumstances.

10. There is, however, greater scope for approving requests for temporary avoidances for individual events with a pre-determined start and finish time and these are granted wherever possible. Typical events for which temporary avoidances can be given include: agricultural shows, rideouts and major sporting and cultural events in rural locations. Requests should be submitted in writing to the point of contact shown at Annex D. To allow effective promulgation to all flying units of the avoidance locations, requests should be sent fourteen days before the event start date and contain the following information: contact name and address; nature and name of the event; location (including an Ordnance Survey grid reference), and dates and times for which the avoidance is being requested.

11. To help manage the UK Low Flying System, it is divided into separate Low Flying Areas (LFAs). There are nineteen LFAs across the UK including Northern Ireland (LFA 19) A pull-out map depicting the UK Low Flying System is at the back of this publication.

12. A number of the LFAs (Nos 1, 3, 9, 10, 13 and 19) are known as Dedicated User Areas (DUAs). These are areas allocated to particular military users. However, permission for other military aircraft users to train in the DUAs can be granted. LFA 13 supports the operation of the Electronic Warfare Training Range at RAF Spadeadam on the Anglo-Scottish border. The others are primarily used for rotary wing training. For example, helicopter



training establishments are found at Middle Wallop (LFA 1) and Shawbury (LFA 9). As the level of helicopter activity in the DUAs can be high, all flying below 2000ft must be booked for the DUAs, whereas normally only rotary wing flying below 500ft needs to be booked. As a result of the different booking arrangements it is not possible to make meaningful comparisons between flying activity in the rotary wing DUAs and that in other LFAs. Figures for the rotary wing DUAs are published at Annex C.

13. Three areas in the Low Flying System are known as Tactical Training Areas (TTAs). It is within the TTAs that Operational Low Flying (OLF) is permitted. OLF is when fixed wing aircraft are authorised to fly as low as 100ft (msd), although larger aircraft such as the C-130 Hercules, are only permitted to fly as low as 150ft (msd). The TTAs are in Wales (within LFA7), northern Scotland (LFA 14) and one extending across south-west Scotland and the Anglo-Scottish border area (TTA 20T), which covers parts of LFAs 16,12 and 13. Only one unit can book in to use a TTA at any given time.

14. Recent operations have underlined the requirement for aircrew to become proficient in low flying at night. In order for aircrew to learn this skill a Night Low Flying System has been developed in the United Kingdom. For practical reasons, fast-jets are confined to an area north of a line approximately from Swansea to Lowestoft with the area to the south of that line principally reserved for helicopter activity. Night flying by aircrew is permitted between half an hour after sunset to half an hour before sunrise, although these timings are standardised on a monthly basis. However, in normal circumstances, and in order to minimise the disturbance this activity can cause, night flying training is generally concluded by 2300 hrs local time. On some occasions, perhaps for a specific element of training or an exercise, permission can be obtained for the aircrew to continue training after 2300 hrs. Permission is granted by either the Air Officer Commanding the group, or DAS in the Ministry of Defence in London.

#### Use of the System

15. An objective of low flying training is to enable crews to be as proficient as possible in a range of terrains. In order to avoid aircrew becoming over-familiar with particular areas, and therefore overconfident, there are no set low-flying routes, and all sorties are individually planned to maximise the training opportunity available. We endeavour to undertake as much as possible of the low flying training that we require during daylight hours on weekdays. Weekends are avoided as much as we can but some weekend flying may be authorised if it is necessary to meet urgent requirements in connection with current or forthcoming operations, or to support exercises or reservist



activity. With the exception of Search and Rescue aircraft, low flying is not normally permitted on national (and Scottish) public holidays.

16. Two general principles of administering the system are to spread the impact of low flying as widely and equitably as possible; and to help ensure that not too many aircraft will be operating within an LFA at one time. Therefore a system is in place that allows the Low Flying Booking Cell to "cap" the number of low flying aircraft in the LFAs used most heavily by fixed wing aircraft.



#### Safety

17. Safety is a paramount consideration for the people on the ground, for military aircrew and for other airspace users. Military flying training standards are extremely rigorous, and aircrew are not permitted to fly at low level until they are judged to be competent. Regulations applying to low flying are respected, which is reinforced by the monitoring and policing of the system. There is a close dialogue between the military and civilian aviation communities who regularly exchange views on operating procedures and regulations. Forums for discussion include "ShAirspace" regional meetings, which are regularly held to provide opportunities for military and civilian airspace users (including airports, airlines and flying schools) up and down the country to discuss issues of interest and increase understanding. Military-Civilian Aviation Safety Days are very popular, allowing individual civilian fliers (e.g. owners of light aircraft) to be briefed on relevant safety issues.

18. A considerable amount of work has been conducted to improve the safety awareness of horse riders. The contribution to increasing awareness resulted in recognition by the British Horse Society with the award for Community Safety in 2007.

#### Foreign Use of the UKLFS

19. Low flying by the aircraft of allied nations in the UKLFS is permitted on a very small scale. In 2007-2008, some 168 low flying hours were flown by foreign-based aircraft. However, this is generally done on the basis of reciprocity, with visiting aircraft only permitted to fly to the same height and extent that would apply to UK military aircraft visiting the country concerned. Great care is taken to ensure that visiting aircrew are fully briefed on the UKLFS by a UK user in person, and that the requirements of our high standards are met before they are permitted to begin operating. United States Air Force (USAF) aircraft permanently based in the UK are not regarded



as visiting aircraft – they are subject to the same considerations that apply to our own military aircraft. However, USAF fast jet aircraft generally only operate down to 500ft (msd), rather than the 250ft (msd) used by UK military aircraft.

#### The Impact of Low Flying

20. The Ministry of Defence understands that low flying activity has an effect on the community at large and, to some extent, the wider environment. Although the amount of low flying conducted is the minimum necessary to achieve and maintain operational effectiveness, every effort is made to minimise the impact on the public. Measures to improve communication about low level flying training activity with the public were introduced some years ago and riders have been able to obtain information about helicopter low flying via a freephone telephone number. In the next year the introduction of new recording systems should enable the information to be extended to cover fast jet activity.



#### **Monitoring the System**

21. All users of the low flying system are required to make a booking with the Low Flying Booking Cell at RAF Wittering. This allows the Ministry of Defence to know how much low flying training is being conducted, and to enable them to quickly verify what activity has taken place in a given location in the event of any complaint.

22. The Ministry of Defence also undertakes regular covert monitoring of the Low Flying System using the Skyguard radar system. Skyguard is able to track aircraft and can take recordings of the height and speed of aircraft. It is deployed up to twelve times each year around the country in order to check that aircrew are adhering to low flying regulations. The decision where to deploy Skyguard is taken by the Low Flying Complaints and Enquiries Unit (which is part of the Directorate of Air Staff at the MOD Headquarters) in consultation with the Defence Flying Complaints Investigations Team (DFCIT), a specialised unit based at RAF Henlow in Bedfordshire.

23. When the area to be monitored is agreed, DFCIT personnel undertake a reconnaissance of the area in order to determine appropriate locations and the radar is then deployed. This is done without notification to military airspace users or UK military bases in order to make the monitoring as effective as possible.

#### Environment

24. The Ministry of Defence is committed to doing as much as it can to help safeguard the natural environment. It maintains regular dialogue with the environmental Statutory Bodies to address a range of issues, including the effect of bird migration patterns and the need to avoid areas of particular environmental or scientific interest. In particular, the Ministry of Defence is committed to ensuring that the potential environmental impact of introducing all new equipment is fully considered.

#### Wind Turbines

25. The Government is committed to increase the proportion of our energy needs produced from renewable sources. The Ministry of Defence acknowledges that a significant proportion of this can be achieved through the

use of wind turbines and is therefore supportive of the Government's targets. Military training can be adapted to take account of many interests, including those of the wind energy industry. The Ministry of Defence participates in a consultation exercise with wind energy developers that allows us the opportunity to highlight any concerns it may have over particular proposals. The Ministry of Defence has a responsibility to ensure that proposals to develop wind turbines do not compromise our radar and communications systems, or unnecessarily inhibit the ability to conduct low flying training. Each proposal is considered on its own merits. But, as a general rule, objections to wind turbine proposals are only raised on the grounds of low flying in the most crucial cases.





26. At the pre-planning stage of development, 2007-2008 (training year) The Ministry of Defence assessed 1219 wind farm proposals. Concerns were raised with 82 of these proposals for low flying reasons. This equates to just 7% of proposals received in the year. When an objection is made, developers are now advised of the reasons, and constructive advice is offered on how these concerns could be minimised. In most cases aircrew know where wind turbines are, they can treat them as they would any other obstacle to be avoided. However, the proliferation of wind turbine developments does restrict the available airspace for certain training, particularly OLF. This is why, as far as military low level flying training is concerned, one of the Ministry of Defence's principal concerns relate to wind turbine development in the three Tactical Training Areas, and around LFA 13 at RAF Spadeadam. Outside of these areas, and in some cases on the edge of these areas, the Ministry of Defence will generally not object on low flying grounds to wind turbine development.

#### **Aircraft Noise**

27. The Ministry of Defence recognises that the major impact of low flying on the wider community is the disturbance caused by noise. Whilst the Department is confident that the operating restrictions imposed are sufficient to ensure that noise from aircraft using the UKLFS is not injurious to the health of people on the ground, we do accept that aircraft noise can be disturbing. For this reason we endeavour to minimise the impact on particular areas by keeping the hours flown to an absolute minimum; dispersing the low flying activity as widely as possible, and restricting the speed and height at which fast jet aircraft are permitted to fly – normally a maximum cruise speed of 450 knots (517mph).







# Low Flying and the Public

#### Commitment

28. The Ministry of Defence is very conscious of the concerns of the wider community. For this reason a number of commitments to the public on military low flying are maintained. They are:

- To make every effort to limit disturbance to the community from low flying training.
- To restrict the amount of low flying training in the UK to that essential for aircrew to reach and maintain operational readiness.
- To continuously assess the need for low flying training in the UK.
- To examine all complaints about low flying individually and endeavour to provide a personal reply within 15 working days.
- To make every effort to provide prior warning of major exercises involving military low flying activity and advance notification of the time allocated for Operational Low Flying training.

#### Publicity

29. The Ministry of Defence seeks to maintain public awareness of the need for low flying through a variety of ways:

Information published on the internet -http://www.mod.uk/DefenceInternet/AboutDefence/WhatWeDo/AirSafetyandAviation/LowFlying/

- Regional Community and Relations Officers (RCROs) based in Southern Scotland, Cumbria and Tynedale, and Wales promote awareness of military low flying, making presentations and home visits on request.
- A team from the Directorate of Air Staff is available to provide briefing on the subject to Local Authority Councils and other interested parties.
- A leaflet and CD video entitled "Operating in a hostile world The case for Low Flying", which are available from the Directorate of Air Staff.
- A leaflet entitled 'Military Helicopter Low flying A Safety Guide for Riders' that is also available to download at http://www.mod.uk/DefenceInternet/AboutDefence/ CorporatePublications/AirSafetyandAviationPublications/MilitaryLowFlying/ MilitaryHelicopterLowFlyingSafetyAGuideforRiders.htm



30. Since 1<sup>st</sup> March 2007, members of the public have been able to call a free-phone advisory service to enquire about what low flying military helicopter activity is expected in their low flying area that day. The telephone number to call is 0800 51 55 44. The service currently provides details of military helicopters only but it hoped to extend this to incorporate fast jet activity. Due to the high levels of activity close to helicopter training schools and main helicopter operating bases, it is not possible to provide a forecast for these Dedicated Helicopter User Areas (LFAs 1, 3, 9, 10 and 19 on the map at the back of this publication). The Ministry of Defence recognises there are limitations to the level of service it can provide, but it is committed to improving the level of detail that can be given to the public. It should be noted that this telephone line should not be used by those wishing to complain about military low flying activity. The Complaints and Enquiries Unit (see paragraph 31) has a dedicated telephone line for this purpose.

A list of useful contacts can be found at Annex D of this document.

#### Complaints

31. All complaints about low flying aircraft are treated very seriously. Over the last training year (1 April 2008 to 31 March 2008) a total of 3811 complaints were recorded, a decrease of 18% on the previous year. These are complaints that have been made to military units, to Regional Community Relations Officers, or direct to the Low Flying Complaints and Enquiries Unit at MOD Headquarters. However a complaint is made, the details are recorded and, if appropriate, an investigation is carried out in order that a suitable reply can be given to the complainant.

32. When a complaint is made to the Complaints and Enquiries Unit (CEU) in London (perhaps by telephone), a member of the CEU who takes the call will try to get as much detail as possible from the caller as to the nature of the complaint, when and where the incident happened, the type of aircraft, or at least whether it was a fast-jet or helicopter, and whether there were any special circumstances. Regardless of the amount of detail the CEU receive, they will try to identify the aircraft involved (although as a minimum a date, time and location is required). The next step is to identify the Low Flying Area within which the incident occurred; with that information the CEU team member will ask the Low Flying Booking Cell at RAF Wittering to provide a list of all aircraft



booked into the relevant area, with times that they were present. In most cases this will allow the CEU to identify the aircraft concerned, and a swift response to be given to the complainant.

33. If, for any reason, the aircraft cannot be identified in this way, or there are any allegations of some impropriety, the next stage is for the CEU team to approach the Defence Flying Complaints Investigation Team (DFCIT) for assistance. The DFCIT is comprised of specialist, experienced investigators, who conduct enquiries at a variety of levels to establish whether there has been breach of the low flying regulations. When asked to investigate a complaint the DFCIT will determine the level of investigation to be carried out. At the very minimum they will conduct what is termed a log and trace, which is very similar to the procedure followed when a request is made by the CEU to LFBC. However, the DFCIT have the opportunity to go into more detail. The next level is to go onto an office enquiry, which is conducted from the DFCIT's headquarters. This will involve them contacting flying establishments by telephone to enquire into the circumstances of a particular incident.



34. Finally, the DFCIT may choose to conduct a <u>Full Field Investigation</u>. This would involve the investigators interviewing complainants, witnesses and the flight crew. The DFCIT are also able to analyse radar records, if available. Under a field enquiry the investigators can access in-flight data including cockpit voice recordings if the aircraft has these. Investigations at this level are generally only used for the more serious cases, or where, for instance a claim for compensation has been made. However, if in the course of their investigation the DFCIT believe that a serious breach of the low flying regulations has occurred, the investigators may upgrade the status of the enquiry to a Service Police Investigation. Such an investigation covers the same ground as a field enquiry, but it is conducted in accordance with the requirements of the Police and Criminal Evidence Act (PACE), for use if formal disciplinary action is taken against any personnel. Procedures for investigating serious incidents have been recently reviewed and improved to ensure swift collection, and protection of evidence.

35. When the DFCIT has concluded its investigation, the findings are returned to the CEU (or such other authority that has requested the investigation) who will then write to the complainant setting out the findings. This process is designed to be dealt with as quickly as possible (in most cases within 15 working days). However, occasionally there can be delays in producing a final report depending on the complexity of the investigation.

The number of complaints recorded in	n the UKLFS, excluding the	DUAs, in 2007/8 is shown	in the table below:
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LFA	Total Complaints	Flying Hours	Average Flying Hours per Complaint
2	471	6379	14
4	230	2484	11
5	377	2966	8
6	201	1657	8
7	363	5892	16
8	90	855	10
11	263	3358	13
12	65	2247	35
13	33	510	15
14	498	5463	11
16	145	2237	15
17	160	3269	20
18	106	484	5

The Department is not complacent about complaints and reviews the situation regularly to determine whether any changes could be effected in the UKLFS to reduce the number of complaints, particularly in the areas where the average hours per complaint are lower than the average across the non-DUAs.



# Low Level Flying Activity Levels

#### Overview

36. The training year 2007/2008 has shown the amount of low flying training conducted within the UKLFS, excluding the DUAs almost stable. The figures reflect a decrease in fixed wing hours offset by an increase in rotary wing hours. The booked military low flying training for the training year 2007/2008 is shown in the table below; the previous year's figures are given for comparison.

	Fixed Wing	Rotary Wing	Total
2007-2008	20,441	17,354	37,795
2006-2007	21,553	16,164	37,717
2005-2008	26,321	18,109	44,430

#### The Amount of Low Flying Training by LFA

37. Information on the low flying training activity (including OLF) is provided for each LFA in Annex A.

#### **Relative Intensity of Activity**

38. Data regarding the relative intensity of low flying activity for the training year 2007/08, for each LFA is provided at Annex B. The important element of this is the relative percentages shown on the map, as opposed to the actual number of hours flown; a high number of hours in a large area may result in a relatively low intensity.

#### Activity Levels in the Rotary Wing Dedicated User Areas

39. Given the different booking arrangements and procedures for operating in the DUAs, information on activity levels is maintained separately and is provided at Annex C. Although LFA 13 is technically a DUA, information is included in the table at Annex A. This is a reflection of the fact that a considerable amount of low flying in LFA 13 – which serves the Electronic Warfare Tactics Range (EWTR) at Spadeadam - is conducted by fixed wing aircraft.

#### **Operational Low Flying**

40. Operational Low Flying (OLF) by fixed wing aircraft between 250ft (msd) and 100ft (msd) is more representative of the altitude at which pilots would actually fly in a combat scenario. As much as possible OLF is "exported" overseas, however, it is not possible to "export" all OLF and it is envisaged that we will continue to make use of the Tactical Training Areas (TTAs). OLF by fixed wing aircraft represents a very small percentage of the total low flying training by fixed wing aircraft that is conducted in each training year – less than 1.5%.



41. Data on the amount of OLF, is included in the overall activity levels provided at Annex A. The Ministry of Defence acknowledges the disturbance that OLF in particular can cause and it therefore seeks, as far as possible, to distribute the levels of low flying between the TTAs in proportion to their size, as indicated by the following figures (which include a 10% overall tolerance):

Wales (LFA 7T) – 9 % Northern Scotland (LFA 14T) – 40 % Northern England/Southern Scotland (LFA 20T) – 51 %

42. The table below shows the amount of OLF activity for the training year 2007/2008, with corrected figures for previous years. As can be seen there has been a large decrease in the amount of OLF training undertaken in 20T and 14T offset a slight increase in training in 7T.

LFA	2007/08	2006/07	2005/07
LFA 7T	18 hrs 3 mins	14 hrs 30 mins	13 hrs 49 mins
LFA 14T	76 hrs 32 mins	161 hrs 11 mins	161 hrs 48 mins
LFA 20T	96 hrs 4 mins	179 hrs 35 mins	202 hrs 53 mins

#### Conclusion

43. The amount of low flying training taking place across the UK in the training year 2007/2008 showed a small increase on the preceding year, but is still low in historical terms. The requirement for low flying training by both fixed wing and rotary wing aircraft remains under constant review and the Ministry of Defence is satisfied that the minimum amount of low level flying training is being conducted in order to maintain operational effectiveness and readiness. The Ministry of Defence takes its responsibilities to the public extremely seriously and has in place processes to improve the communication of this essential flying training to members of the public.

44. A report for the training year 2008/2009 will be published next summer.





## **ANNEX** A

# THE AMOUNT OF LOW FLYING TRAINING BY LFA (EXCLUDING DEDICATED USER AREAS)

1. The low flying system is divided into a number of individual Low Flying Areas (LFAs). The features of each LFA are described below and the accompanying tables show the number of hours of booked low flying in each LFA for the training year 2007/2008, while the graphs provide an indication of trends in monthly activity over the last three years.

Note: The areas quoted as being available for low flying exclude those areas that would otherwise be within the LFA boundaries from which low flying aircraft are debarred, e.g. major exclusions, towns with populations of more than 10000 people, etc. A review of the usable areas was conducted based on the results of the 2001 Census resulting in additional town avoidance areas. The disparities in the hours booked figures are due to the effects of rounding down periods of just less than  $\frac{1}{2}$  hour.

#### LFA 2

2. LFA 2 includes Devon, Dorset, Somerset, east Cornwall, southwest Gloucestershire and northwest Wiltshire. RNAS Yeovilton and RAF Lyneham (both major flying stations) as well as RAF St Mawgan, RAF Fairford, the Royal Naval Dockyard of Devonport, the Royal Marines barracks at Chivenor

and Lympstone, and the Army training area on Dartmoor are situated in the area. LFA2 has approximately 15,783 km<sup>2</sup> (6,094 sq mls) of air space available for low flying training, some 8.8% of the total useable overland area of the UKLFS.

3. Helicopters have a comparatively short range and this tends to restrict aircrew low flying training on RN Lynx and Sea King helicopters based at RNAS Yeovilton to areas close to the airfield. Additionally, Yeovilton based aircraft need to transit out and back overland to train over the sea. A significant number of RAF and Army Air Corps (AAC) helicopters train over Dartmoor, and Sea King helicopters routinely support RM training at Lympstone and Chivenor. Hercules transport aircraft from RAF Lyneham are a major user of LFA2 because a number of drop zones are maintained on Exmoor, Dartmoor and in the area surrounding RAF Lyneham itself.





Hours booked for day and night low flying				
LFA2 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	6,379	1,572	4,808	





4. LFA 4 includes Herefordshire, Worcestershire, Gloucestershire, south Shropshire, southwest Warwickshire and west Oxfordshire. RAF Brize Norton is the only major flying station in the area; other service establishments include RAF Innsworth, RAF Weston-on-the-Green, and the Army establishment at Hereford. It has approximately 8,440 km<sup>2</sup> (3,259 sq mls) of airspace available for low flying training, some 4.7% of the total usable overland area of the UKLFS.

5. As there is only one major flying station in LFA 4 the area is used predominantly by aircraft transiting elsewhere, particularly fixed wing aircraft en route to and from LFA 7 (Wales) and LFA2 (the West Country).





Hours booked for day and night low flying				
LFA4 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	2,484	1,192	1,292	





6. LFA 5 includes Norfolk, north Suffolk and most of Cambridgeshire. RAF Marham, RAF Mildenhall and RAF Lakenheath (all major flying stations), as well as RAF Honington, RAF Air Weapons Ranges at Holbeach and Wainfleet, and the Army training centre at Stanford Camp are situated within it. LFA 5 has approximately 5,785 km<sup>2</sup> (2,232sq mls) of airspace available for low flying training, some 3.2% of the total usable overland area of the UKLFS.

7. LFA 5 is a relatively small area. It is used by fixed wing aircraft, particularly those transiting to the Air Weapons Ranges. Helicopter activity is generally associated with Stanford and the United States Air Force 352 Special Operations Group based at RAF Mildenhall.





Hours booked for day and night low flying				
LFA5 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	2,966	1,124	1,842	





8. LFA 6 includes Northamptonshire, Bedfordshire, Rutland and parts of Leicestershire, Lincolnshire, Cambridgeshire, Buckinghamshire and Hertfordshire; RAF Wittering and RAF Cottesmore (two major flying stations), as well as RAF Henlow, RAF Brampton, RAF Wyton and Bassingbourne Barracks are located in the area. It has approximately 10,833 km<sup>2</sup> (3,594 sq mls) of airspace available for low flying training, some 5.2% of the total usable overland area of the UKLFS.

9. Much of the low flying activity in LFA 6 involves aircraft transiting to and from the Air Weapons Ranges on the east coast, or aircraft from RAF bases in the area flying to and from Wales and the West of England. It is also extensively used by training aircraft based in Lincolnshire and Yorkshire.





Hours booked for day and night low flying				
LFA6 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	1,657	831	826	





10. LFA 7 includes the whole of Wales except for a small area northeast of Powys, which is in LFA 9 (see Annex C). RAF Valley (a major flying station), RAF St Athan and the Air Weapons Range at Pembrey Sands, Army Barracks at Brawdy and Field Training centres at Castlemartin and Sennybridge, and the Royal Artillery range at Manorbier are all in the area. The range at Manorbier, near Tenby, sees considerable amount of usage for activities where aircraft are working in support of ground forces. It has approximately 20,135 km<sup>2</sup> (7,774 sq mls) of airspace available for low flying training, some 11.2% of the total usable overland area of the UKLFS.

11. The Welsh landscape and little controlled airspace above 2,000ft (offering increased flexibility for military aircraft to enter or leave the lower airspace), combine to make LFA7 a key training are for military low flying training. RAF advanced fast-jet pilot training is carried out at RAF Valley using Hawk aircraft, the range limitations of which generally mean that most of the associated flying activity needs to be carried out locally, some of it using the Pembrey Range. Much of the helicopter activity is associated with Castlemartin and Sennybridge, RAF Search & Rescue training at RAF Valley, Support Helicopter and AAC aircrew pre-deployment training for overseas operations and the Defence Helicopter Flying School at RAF Shawbury in the adjacent LFA9.





Hours booked for day and night low flying				
LFA7 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	5,892	3,582	2,310	





12. Stretching from the Ribble Valley and Forest Moor in the north, to Warwick in the south, and from the Wirral in the west to Doncaster and Nottingham in the east, LFA 8 has no major flying stations but is home to RAF Cosford, RAF Stafford and RAF Woodvale. It has approximately 10,833 km<sup>2</sup> (4,183 sq mls) of airspace available for low flying training, some 6% of the total usable overland area of the UKLFS.

13. Much of LFA 8 (42%), particularly around the outer edge is unusable for military low flying because of large avoidance areas over Liverpool/Manchester, Blackpool/Blackburn, Leeds/Bradford, Derby/Nottingham and the West Midlands conurbation. The additional need to avoid over-flying towns such as Stoke, Barnsley, Doncaster, Chesterfield, Sheffield and Mansfield makes the area particularly difficult to access by air and, therefore, reduces the use made of it for low flying training.





Hours booked for day and night low flying			
LFA8 TOTAL FIXED WING HELICOPTE			
TY 2007/2008	855	187	668





14. LFA 11 includes northeast Lincolnshire, northeast Nottinghamshire and east Yorkshire. RAF Leeming, RAF Linton-on-Ouse, RAF Cranwell, RAF Barkston Heath, RAF Coningsby, RAF Waddington, and AAC Dishforth (all major flying stations), Linton-on-Ouse satellite airfields at RAF Church Fenton and RAF Topcliffe, and the Air Weapons Range at Donna Nook are all situated in the area. It has approximately 11,960 km<sup>2</sup> (4,618 sq mls) of airspace available for low flying training, some 6.7% of the total usable overland area of the UKLFS.

15. Historically, Lincolnshire and Yorkshire have been home to a large number of RAF stations but these have reduced, and only six major flying stations remain. The principal role for three of these; RAF Cranwell, RAF Barkston Heath and RAF Linton-on-Ouse, is flying training and their aircraft generally train locally. LFA 11 is also used regularly by aircraft based elsewhere transiting to and from the RAF Air Weapons Ranges on the Wash, and training areas in LFA 5.





Hours booked for day and night low flying				
LFA11 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	3,358	2,041	1,317	





16. LFA 12 covers Northumberland, Durham and northeast North Yorkshire. Although there are no major flying stations in the area, other service establishments include the Army Field Training Centre at Otterburn, Albemarle Barracks at Ouston and RAF Air Defence Radar sites at Boulmer (which also houses an RAF Search & Rescue detachment) and Brunton. It has approximately 6,012 km<sup>2</sup> (2,321 sq mls) of airspace available for low flying training, some 3.4% of the total usable overland area of the UKLFS.

17. LFA 12 is ideal for military low flying training. It contains some of the most challenging terrain for aircrew, has more unrestricted airspace above 2,000ft (giving increased flexibility to military aircraft to enter or leave lower airspace) than many other areas, is sparsely populated and generally experiences better weather than to the west of the country. Day-to-day transiting to low flying activity is also associated with the Army's use of Otterburn and aircraft using the Electronic Warfare Tactics Range at RAF Spadeadam in the adjoining LFA 13.





Hours booked for day and night low flying				
LFA12 TOTAL FIXED WING HELICOPTER				
TY 2007/2008 2,247 1,444 803				





18. LFA 13 includes the south Borders Region, west Northumberland and northeast Cumbria. The area serves RAF Spadeadam's Electronic Warfare Tactics Range. It has approximately 2,035 km<sup>2</sup> (788 sq mls) of airspace available for low flying training, some 1% of the total usable overland area of the UKLFS.

19. Practically all low flying training in LFA 13 is associated with the Range at Spadeadam. Therefore, although LFA 13 is technically a DUA, information is included in this Annex because, unlike the other DUAs where intensity of rotary wing flying prevents realistic comparison with non-dedicated low flying areas, LFA 13 experiences more fixed than rotary wing flights.





Hours booked for day and night low flying					
LFA13 TOTAL FIXED WING HELICOPTER					
TY 2007/2008 510 239 271					





20. LFA 14 covers mainland Scotland north of the Central Region, the Western Isles, Orkney and Shetland. RAF Lossiemouth, RAF Kinloss and RAF Leuchars (all major flying stations), as well as the Air Weapons Range at Tain, Army Training Areas at Barry Buddon, Benbecula, Garelochhead and Inverness, the Royal Marines Barracks at Arbroath, and RN training areas at Cape Wrath and Loch Ewe are situated within it. LFA 14 has approximately 57,604 km<sup>2</sup> (22,241 sq mls) of airspace available for low flying training, some 31.6% of the total usable overland area of the UKLFS. It includes the area known as LFA 14C (a small area between Aberdeen and Rattray Head, with approximately 935 km<sup>2</sup> (361 sq mls)).

21. The use of LFA 14 for low flying training depends on a number of operational, geographical and climatic factors. These include: where aircraft are based; prevailing weather conditions; the location of military training areas; and the incidence of restricted airspace and built-up areas. Although hours booked for low flying are high, the size of the area allows activity to be distributed within it more widely than in other LFAs.





Hours booked for day and night low flying				
LFA14 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	5,463	3,741	1,722	





22. LFA 16 includes the Borders Region of Southern Scotland, Dumfries and Galloway and other counties up to and including those within the central belt. The RN helicopter base at Prestwick, the QinetiQ range facilities at West Freugh, and the Army training area at Kirkcudbright are located in the area. It has approximately 16,142 km<sup>2</sup> (6,232 sq mls) of airspace available for low flying training, some 9 % of the total usable overland area of the UKLFS.

23. LFA16 is a good area for low flying training. It has challenging terrain which, for the most part, is sparsely populated, a high incidence of unrestricted airspace above 2,000ft (giving increased flexibility to military aircraft to enter or leave the lower airspace), and better than average weather conditions. Additionally, the area is close to the Army Field training Centre at Otterburn, and it borders on the Electronic Warfare Tactics range at RAF Spadeadam.





Hours booked for day and night low flying					
LFA16 TOTAL FIXED WING HELICOPTER					
TY 2007/2008 2,237 1,982 255					





24. LFA 17 includes Cumbria, east North Yorkshire, and north Lancashire. Army Field Training Centres at Catterick and Warcop, along with QinetiQ range facilities at Eskmeals in the west of the Lake District are situated within it. It has approximately 11,295 km<sup>2</sup> (4,347 sq mls of airspace available for low flying training, some 6.4% of the total usable overland area of the UKLFS.

25. The terrain in LFA 17 is valuable in terms of flying training practice, particularly for fast jet aircrew as the area is relatively free from large urban areas. RAF Spadeadam's Electronic Warfare and Tactics Range is located in the adjoining LFA 13.





Hours booked for day and night low flying					
LFA17 TOTAL FIXED WING HELICOPTER					
TY 2007/2008 3,264 2,395 869					





26. LFA 18 includes Kent, East Sussex and southeast West Sussex; the Isle of Wight, and parts of Hampshire and Dorset are also within the area, although military low flying does not normally take place in these area. Military facilities in the area include the Royal Naval Dockyard at Portsmouth, the Royal Marine Base at Poole and the Army's Cinque Ports Field Training Centre. It has approximately 3,390 km<sup>2</sup> (1,517 sq mls) of airspace available for low flying training, some 2.2% of the total usable overland area of the UKLFS.

27. LFA 18 is cut off from the rest of the UKLFS by the Thames Valley Avoidance Area (some of the busiest controlled airspace in the world), two separate military Dedicated User Areas (DUAs) and a number of airspace danger areas over the English Channel. A relatively large number of built-up areas and some large light aircraft landing sites are also areas to be avoided and significant airspace restrictions above 2,000ft (reducing the scope for military aircraft to enter or leave the lower airspace), include the Gatwick Control Zone. All of these factors make it difficult for military aircraft, particularly fast jets, to use the area.





Hours booked for day and night low flying				
LFA18 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	484	112	372	







#### **RELATIVE INTENSITY OF ACTIVITY**

1. Information about the relative intensity of low flying activity by LFA for the period covered by this report is provided below. The relative intensity figures are obtained annually by comparing the hours booked per km<sup>2</sup>in an LFA with the average booked per km<sup>2</sup> overall for the listed LFAs. Annual increases and decreases in the relative intensity for an LFA may not be matched by similar increase or decreases in actual booked low flying activity.

Training Year 2008/2008	All aircraft	Fixed Wing	Rotary Wing	Usable Area (km²)
LFA 2	6379	1572	4808	15783
LFA 4	2484	1192	1292	8440
LFA 5	2966	1124	1842	5785
LFA6	1657	831	826	10833
LFA7	5892	3582	2310	20135
LFA8	855	187	668	10833
LFA 11	3358	2041	1317	11960
LFA 12	2247	1444	802	6012
LFA 13	510	239	271	2035
LFA 14 (LFA 14C)	5463	3741	1722	57604
LFA 16	2237	1982	255	16142
LFA 17	3264	2395	869	11295
LFA 18	484	112	372	3390
GB TOTAL (non DUA)	37796	20442	17354	180247

2. Total hours booked for day, night and OLF activity:

3. A map illustrating the relative intensity of activity in percentage terms appears opposite. In providing relative intensity information it must be remembered that 100% would be the optimum level of activity for an LFA experiencing an amount of low flying proportionate to the total area of airspace available in the UKLFS (less Dedicated User Areas – see Annex C).





## ANNEX C

#### ACTIVITY LEVELS IN THE DEDICATED USER AREAS

1. As explained in the body of this statement, the following stand-alone information is provided for Dedicated User Areas. Responsibility for the day-to-day management of low flying is delegated to a specific user as shown:

Low Flying Area	Specified User
1A	HQ Land Command
1B	RAF Odiham
1C	RAF Benson
3	RNAS Culdrose
9	RAF Shawbury
10	Army Air Corps Wattisham
19	Northern Ireland

2. Booked low flying in the DUAs is recorded differently from that in the rest of the UKLFS. Owing to the intense usage of airspace around the main helicopter establishments and training schools, all aircraft activity up to 2,000ft in a DUA requires a booking. A booking is not required for helicopter activity above 500ft in other LFAs in the UKLFS and for this reason direct comparisons are not appropriate.

3. The tables below show the number of hours of booked low flying in each LFA for the training year 2007/2008 and the graphs provide an indication of monthly trends in activity over the last three years(except LFA 19).





4. LFA 1, located in southern England, has total usable airspace for military low flying of 6,775 km<sup>2</sup> (2,616 sq mls). It is sub-divided and shared between RAF Benson, RAF Odiham and Salisbury Plain Training Area and each has their own separate area.





Hours booked for day and night activity				
LFA1 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	11,322	694	10,628	





5. LFA 3 is situated in southwest England and has usable airspace for military low flying of 921 km<sup>2</sup> (356 sq mls). It is used by units at RNAS Culdrose.





Hours booked for day and night activity				
LFA3 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	1,168	460	708	





6. LFA 9 is situated in north Shropshire and northeast Powys and has usable airspace for military low flying of 1,763 km<sup>2</sup> (681 sq mls). It is used principally by the Defence Helicopter Flying School, based at RAF Shawbury.





Hours booked for day and night activity				
LFA9 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	6,383	12	6,371	





7. LFA 10 is situated in Suffolk and east Essex. It has usable airspace for military low flying of 2,900 km<sup>2</sup> (1,120 sq mls) and is used by Army Air Corps Regiments at Wattisham.





Hours booked for day and night activity				
LFA10 TOTAL FIXED WING HELICOPTER				
TY 2007/2008	1,241	36	1,205	





7. LFA 19 covers the whole of Northern Ireland . It has usable airspace for military low flying of 8337 km<sup>2</sup> (3219 sq mls) and is used by helicopters authorised through RAF Aldergrove.





Hours per month in latest financial year			
LFA19	TOTAL	FIXED WING	HELICOPTER
TY 2007/2008	313	0	313

The figures reflect activity from 1 August 2008 post Op Banner.







#### **List of Useful Contacts**

The MOD's website on Military Low Flying:

www.mod.uk/issues/low/flying

Free-phone telephone advisory service for helicopter activity 0800 51 55 44

For further information:

Ministry of Defence Complaints and Enquiries Unit Directorate of Air Staff Level 5, Zone H Main Building Whitehall London SW1A 2HB

Tel: 020 7218 6020 Fax: 020 7218 2680

e-mail: lowflying@mod.uk

Regional Community Relations Officer (Cumbria & Tynedale) Inglewood Road Penrith Cumbria CA 11 8QN

Tel/Fax: 01768 891 391

Regional Community Relations Officer (Southern Scotland) Irvine House Canonbie Dumfries & Galloway DG 14 OXF

Tel: 01387 381156 Fax: 01387 380904



Community Relations Officer (Wales)

Royal Air Force Community Relations Officer Wales The Barracks Brecon Powys LD3 7EA

Tel: 01874 613889

Website: www.raf.mod.co.uk/crowales

For requests for avoidance areas:

Ministry of Defence Directorate of Air Staff (Ops & Pol) 5<sup>th</sup> Floor Zone H Main Building, Whitehall, London, SW1A 2HB.

For claims against the MOD resulting from military Low Flying:

Ministry of Defence DS&C(Claims) 7<sup>th</sup> Floor, Zone A St George's Court 2-12 Bloomsbury Way London WC1A 2SH

Tel: 020 7305 3208

