EXECUTIVE SUMMARY

Background

The General Aviation Challenge Panel was established by Ministers in November 2013. This followed the Government's General Aviation Red Tape Challenge (RTC) earlier in 2013 and is part of the Government's objective to reform the way General Aviation (GA) is regulated in the UK, particularly with a view to implementing more proportionate, risk-based regulation of the sector. The Panel is wholly independent of Government or the Regulator, and is aimed at providing a "critical friend" function to the Civil Aviation Authority (CAA), indirectly to the European Aviation Safety Agency (EASA) and has been tasked by Ministers to deliver two reports: an interim report by the end of January 2014 followed by a final report at the end of April.

This interim report provides initial findings by the Panel and a number of recommendations to the Government for changes to improve the regulation and administration of GA.

Remit and Scope

In setting up the Panel, Ministers outlined a number of key areas for it to consider and report upon. These included providing a detailed assessment of the CAA's own programme for regulatory reform, consideration of how the CAA could be more transparent in its regulatory oversight and how the it might deliver culture change within the organisation, and identifying ways of reducing regulatory burdens which emerge from the EU including avoiding unnecessary "gold-plating" of EU requirements. The Panel was asked to support a "myth-busting" exercise to remove uncertainties and misunderstandings within the GA community about the regulation of the sector by the CAA.

As well as looking at specific deregulatory measures, the Panel was also asked to identify ideas or projects which might support growth of the sector and in turn provide economic benefits for the UK.

Approach

The independent Panel comprises six people appointed by Ministers who have between them a wealth of experience and knowledge of the GA sector and wider planning matters. The Secretariat for the Panel is provided by officials in the Department for Transport (DfT).

Key reference documents for the Panel to consider have been the outputs from the Government's Red Tape Challenge and the CAA's response to this. The full Panel has met formally four times, with additional sub committee meetings and conference calls and has reviewed all 278 suggestions for improving the regulation of GA and the CAA responses. These discussions have been greatly informed by personal experience of General Aviation by Panel members and their insights into the way GA is currently regulated.

In addition to formal meetings, Panel members have engaged a range of GA stakeholders and representative bodies. For the interim report, this has included discussions and correspondence with the British Gliding Association, the Light Aircraft Association, flight training organisations, the British Balloon Club, parasail groups and some GA airfields. It has also discussed areas of regulation with the CAA.

Before production of its final report, the Panel will meet a number of Government Departments including HM Treasury, the Department for Communities and Local Government, the Department for Business, Innovation and Skills (BIS) and the Home Office. It also intends to consult a wider range of industry organisations on the Panel's emerging findings and recommendations before these are formally submitted to Ministers in April.

As Ministers indicated when the Panel was launched, the Challenge Panel should be free to probe and suggest innovative approaches to achieve deregulatory outcomes and not be constrained by previous or existing policies. This applies equally to its proposed engagement with Government Departments as well as with the CAA and potentially to EASA.

Consideration

The GA Red Tape Challenge received three times as many responses as any other Government RTC exercise; illustrating the strength of feeling within the sector and the real need and opportunity for change. While GA provides significant economic benefits for the UK of around £1.4 billion per annum and has a large direct and indirect employment base, there is evidence that GA activity is declining and that this is not just a result of economic recession. Excessive regulation, increasing costs, and taxation are all perceived to be contributing factors. A main focus of the Panel is to ensure regulation is evidence-based and proportionate, whilst ensuring safety.

The Panel has collated and reviewed data from a range of sources. The review suggests a mixed picture of the health of the sector, with declines in certain key areas. The data demonstrate areas where regulation may be constraining growth of the sector. For instance the number of annual private pilot's licence applications has fallen dramatically from 4500 in 1991 to around 2500 in 2012. There have also been recent declines in the number of hours flown by fixed-wing light aircraft: estimates

suggest 7% fewer hours flown in 2012 than 2003. In comparison, there has been some growth in the less regulated and less expensive microlight sector, indicating how regulation and cost can constrain or increase levels of activity

Key Findings and Recommendations

Against the background of increasing regulation in the GA sector, the Panel has identified a number of interim recommendations which have been grouped into key themes.

CAA Oversight

The Panel acknowledges the crucial importance of the CAA's and EASA's safety regulation requirements, but considers that it could adopt a more balanced approach to this area of its work which would place increased emphasis on the economic health of the aviation sector overall, including GA. Such an approach should not exclusively focus on the interests of commercial aviation which may have been the case hitherto. The Panel therefore recommends that in addition to the measures in the Deregulation Bill currently before Parliament requiring non-economic regulators to have regard to growth, the CAA's duty should be extended so that it should consider opportunities to enable UK GA to contribute to economic growth.

In addition, the Panel considers that EASA's safety oversight requirements do not adequately consider or balance economic growth impacts. The Panel therefore recommends that the UK should support the European Commission's current proposals to balance safety and growth more proportionately to the nature of each particular activity and to the associated risks.

Finance

The Challenge Panel has spoken directly to Andrew Haines, Chief Executive of the CAA, and his Finance Director about the CAA's management of fees and charges and believes that the CAA should provide greater transparency and clearer justification for the level of its charges. Further discussions will take place with the CAA on this issue in order to inform the final report. Notwithstanding any specific recommendations on this subject, the Panel recommends that the Government review the requirement for the CAA to provide a 6% rate of return on capital, a return not required of other UK regulators or generally achievable on the high street.

Culture and Communication

The Panel has identified evidence to suggest that that the way the CAA engages and communicates with the GA community and the way it administers some of its regulatory requirements could be improved. The Panel considers that significant attention should be given to this issue, with particular emphasis on improving the quality of written publications. Overall, while the Panel has not made a specific recommendation at this stage, it strongly feels that there is a need for widespread culture change within the CAA in respect of the way it responds to its customers, industry's requirements and how it communicates regulatory advice. This is an area for further investigation by the Panel ahead of the final report.

Safety Regulation

There were many comments about safety regulation in the RTC responses and the Panel acknowledges that it is difficult to balance the risk, related safety regulation, a spectrum of risk appetite across diverse aviation activity and liabilities. In order to create a more balanced position greater protection should be given to individual decision makers engaged in GA safety regulation and their implementation of good safety management practice. As such the Panel recommends that the CAA outlines steps to protect and reward good management of total system safety in accordance with effective risk assessment. The Government should also consider creating a legal framework to support individual decision makers on their application of good safety management principles.

Risk appetite is also an important consideration and the CAA's new GA unit aims to develop a risk-based approach proportionate to the ability of stakeholders to assess and control risk. The Panel supports the CAA's plans to adopt the principle of "informed consent" for such activity and recommends that the CAA works with the EU and the EASA to develop a shared understanding of "informed consent".

The Panel also believes that the level of allowable risk should vary according to stakeholder class, with for example the highest target level of safety applied to uninvolved third parties. As such the Panel recommends that the CAA develops clear, quantitative target levels of safety for each different class of stakeholder and activity.

Further safety related recommendations by the Panel include careful consideration of the balance of cost and benefits to all certifications and approvals for which the CAA has discretion, and the application of light-touch implementation to EASA rules and proposals not supported by positive UK cost-benefit analysis.

Another area of attention is the application of impact assessments (IAs) to new regulatory measures. The Panel acknowledges that the CAA is committed to carrying out IAs but recommends that these are not just box-ticking exercises, that the IAs contain strategies to mitigate the effects of new regulation on GA and that the CAA carefully considers cost and benefit impacts and conducts a post-assessment review of these factors to improve the robustness of future IAs.

Airspace

Facilitating GA access to airspace is a significant concern of the Panel. In particular, reasonable access to controlled airspace should be provided to users who are not the intended beneficiary of such airspace. Controlled airspace should also be designed to reflect practical operational requirements laterally and vertically and not theoretical requirements based on often over optimistic forecasts of commercial traffic usage.

The Panel expressed particular interest in the development of the CAA's Future Airspace Strategy and sees a number of possible benefits to GA from this, particularly around technological improvements which it will address in its final report.

The Panel welcomes DfT funding for the development of equipment for GA users and recommends that CAA should continue to support work on electronic conspicuity in collaboration with stakeholders.

EU Relationship

The UK's relationship and role within Europe and particularly with EASA has been a crucial area for the Panel to consider. The Panel recognises the important role the CAA and DfT play in developing new EU aviation regulation through EASA and other forums. However, the Panel believes that the CAA could do more to respond to stakeholders' concerns and to engage with the European Commission and EASA to change existing EU laws, for instance where these could be seen as disproportionate. Equally, the CAA should help stakeholders more easily understand the EASA regulatory framework and the rationale behind it.

There is also evidence that in some instances the CAA has implemented EU legislation in a manner that is more onerous for end users than is the case in other Member States. Whilst this "gold-plating" is an issue the CAA already recognises, the Panel encourages the CAA to continue its efforts to eliminate it, for instance by ensuring that the people drafting policies fully understand the trade-offs and the effect on total system safety.

The Panel is encouraged by EASA and the European GA Safety Strategy the Commission's Roadmap for Regulation of GA, and recommends that this should be endorsed by the UK Government and the CAA. The Panel believes that the CAA should engage strongly on this with a view to improving GA regulation across the EU, for example on proportionate requirements for pilot medicals and the maintenance of aircraft.

The Panel also made recommendations in other areas relating to the EU, for instance on the facilitation of cross-border training and the impacts of duality of EU and national regulation in all domains. The Panel will be meeting with EASA and will include that in its final report.

Planning Protection

The Panel recognises a need to secure a network of GA aerodromes which would in addition provide improved opportunities for regional connectivity for many areas not regularly served by the commercial aviation network and also have a role in facilitating lifesaving air ambulance operations and civil protection. However, the trend of losing airports and airfields used by GA will hinder this and reduce their wider economic benefits. There may be many factors relating to the closure of airfields but the designation of some of them as brownfield sites makes them attractive to local planning authorities and owners to redevelop or sell them for others uses, in particular to meet housing stock demands. The Panel has begun work with DCLG to explore opportunities to protect aerodromes from redevelopment.

Growth Projects

In line with its Terms of Reference the Panel was asked to identify projects which could promote economic growth of GA.

Data on the economic value of GA is fairly old now (2006). The Panel therefore believes that research into the direct and indirect benefits of GA to the UK economy would be worthwhile and would help determine what interventions might be appropriate to promote growth.

The outputs from the economic research may also inform other specific aspects of growth within the sector which are of interest to the Panel; particularly on manufacturing, planning, and the training of pilots and engineers. These will be discussed further with relevant Government Departments as part of the Panel's next phase of work.

The Panel remains keen that the overall role and contribution of GA to the UK economy and society be better understood through a coordinated promotional campaign that will facilitate UK GA renaissance to a world leader once more.

Next Steps and Further Work

The Panel will continue to focus its efforts for the final report on confirming some of the recommendations in the interim report, engaging wider GA stakeholders on its work and likely recommendations, and exploring initiatives/issues mentioned above with other Government Departments.

In particular, the Panel wishes to engage with HM Treasury about the impact of taxation on GA, with BIS on training and manufacturing opportunities, with the Home Office on border issues, and with the Department for Communities and Local Government on GA planning matters. It will report on the outcome of these discussions in the final report.

The Panel will continue discussions with the CAA on its Programme for GA and with other stakeholders on specific issues. It will also meet with EASA. It is also organising a seminar with a range of GA representative groups which we hope will take place in late February which will provide an opportunity obtain feedback on its emerging conclusions and recommendations before the final report is produced.

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1. INTRODUCTION - THE GENERAL AVIATION INDUSTRY

1.1. THE RED TAPE CHALLENGE

The GA Red Tape Challenge (RTC) ran in Spring 2013, and resulted in nearly 500 responses identifying both need for a change in the culture of how GA is regulated, and highlighting many areas where specific improvements are needed.

In its response to the GA Red Tape Challenge (CAP1123),[1] the Civil Aviation Authority (CAA) recognised the need for changes in the way GA is regulated. As well as reviewing specific regulations challenged in the RTC, the CAA is setting up a new internal unit within its current structure, in recognition of the fact that regulation appropriate to commercial aviation is often disproportionate when applied to GA.

Also in response to the RTC, the Government appointed an independent Challenge Panel comprising industry representatives and others with an interest in the sector with a reputation for action, knowledge and experience. These are:

- Laurence Price (Chair)
- Edward Bellamy
- Amanda Campbell
- Julian Scarfe
- Pete Stratten
- Chris Thomas

The Panel was appointed on 6 November 2013, and asked:

- To test and critique the CAA's programme for GA reform.
- To identify projects which they consider have the potential to promote growth and innovation in the GA sector.
- To challenge the CAA to be transparent and innovative in its approach to GA regulation.
- To consider whether there are opportunities for further reducing the regulatory burden on the GA sector originating from domestic regulation, the EU, or enforcement of regulations.
- To support a new myth busting process explaining clearly where there are misunderstandings about CAA's role regarding the regulation of GA.
- To consider measures of success for the GA programme.
- To support and challenge the CAA to deliver genuine culture change in its approach to GA regulation so that its role is focussed on supporting and educating rather than regulating and policing.
- To advise on communication between CAA and the GA sector.

This is the Panel's Interim Report and represents its initial findings. The final report will be sent to Government Ministers by the end of April 2014.

The Panel's findings are informed by the Panel's personal expertise in the sector, the public response to the General Aviation Red Tape Challenge, and discussions Panel members have had with members of the UK General Aviation (GA) community, including operators and owners of aircraft, flight training organisations, airfields, and industry bodies representing these groups (including the British Gliding

[1] CAP1123

Association and the Light Aircraft Association). The Panel, or members of the Panel, have also met with the CAA and the Department for Transport (DfT). The Panel is grateful for the correspondence it has had from GA interests including the British Balloon Club, parasail groups, and many individual members of the GA sector. The Panel is grateful to all for their participation, contribution and candour. However, the Panel's work is not yet complete. The Panel would encourage the continued engagement of the GA sector with their work right up until the completion of the final report.

Further meetings with other government departments are planned before publication of the final report. In additional, the Panel is planning further engagement with the CAA. It will also be meeting with representatives from EASA. The Panel may refine its conclusions and recommendations in the light of this and other further work.

The Panel is and will remain totally independent. To ensure transparency and engagement with the sector, the Panel intends to present and discuss its initial findings with representatives from the GA industry covering the whole spectrum of its operations and interest, at a seminar in London at in late February or early March 2014.

This interim report contains a reasonably large number of recommendations because, where the Panel has identified room for improvement in the regulatory framework for GA, it considers it is constructive to articulate how that improvement might be made. Many are simply affirmations of the CAA's stated intent. The Panel recognises that the list of recommendations in the interim report should to be subject to further analysis and co-ordination with the CAA's own project plan before the Panel's final report is published.

The Panel is also conscious that CAA charges GA for all the work done directly for regulation of the sector. It is therefore directly in the interests of GA to ensure that CAA's GA work programme is prioritised effectively, and that the delivery timescales for the GA work programme that CAA has committed to publish in April 2014, when the new GA Unit is launched, is both challenging and realistic.

This Interim report focuses primarily on the impact of the CAA's role in GA regulation. The Panel is planning meetings with Government Departments whose actions and policy have a bearing on GA. These discussions will be reflected in the final report

The Panel remains resolute that as a result of its work, regulatory oversight of GA will be more appropriate, proportionate, and evidence-based, and that this will provide the groundwork for establishing world leadership in General Aviation.

The Panel hopes that its work will not only contribute to achieving Government's goal of UK world leadership in General Aviation, but will also help to improve safety. A proportionate approach to risk is discussed later in the report, but it is worth remembering that a key part of ensuring aviation safety and reducing the overall incident rate in General Aviation is to ensure pilots have had recent experience of flying (to 'maximise currency'). The Panel believes that the CAA should be able to enhance safety by facilitating pilots so that they can fly as frequently as UK weather, aircraft availability and individual budgets will permit; allowing some changes to the 90 day currency validation requirements would facilitate this.

Excess regulation, associated cost and imposition of taxation run counter to this objective but are significantly in the power of Government and the CAA to control, adjust or remove. This is at the heart of the Panel's work to identify opportunities for GA to grow, and to ensure regulation is evidence-based and proportionate.

1.2. THE IMPORTANCE OF GENERAL AVIATION

The UK General Aviation industry was once at the heart of the country's aviation and air transport development. Many pioneering and record-breaking flights were undertaken by light aircraft and by pilots with GA backgrounds. The UK has a unique aviation heritage built on the back of General Aviation. However, the UK has not fully capitalised on its heritage and experience, and is no longer pioneering in its support for and investment in the General Aviation sector.

But this does not mean that General Aviation should be forgotten. In opening the General Aviation Flying Show in November 2013, Lord Digby Jones alluded to the achievements of the UK. He reminded the audience that, as an aviation nation, we have been good at pushing the boundaries in aviation but sometimes we forget just how good we still are, pointing out how much innovation and experience the UK continues to contribute to the production of aircraft, supplying key parts for Airbus and Boeing heavy transports, but also contributing innovation and experience at the light sports and recreational end of the spectrum.

Furthermore, UK General Aviation has a not insignificant economic impact. The most up-to-date figures on the economic impact of General Aviation are from 2005, and suggest that GA employs 11,000 people directly, and directly contributes £1.4 billion annually to the UK economy, about the same economic impact as Virgin Atlantic had at the time.[2] A 2008 PwC report into business aviation estimated that, including non-direct effects, business aviation contributes €4.2 billion to the UK economy.[3]

The UK aviation sector as a whole is of considerable economic importance. Civil aircraft parts are the UK's third largest manufactured product, by sales value, with a value of £6.4 billion[4], and £3.1 billion of sales are in repair and maintenance of civil aircraft. GA is critical to ensuring awareness of and enthusiasm for all aspects of aviation and aerospace is a valuable source of recruits and so should not be forgotten when considering the economic impact of the aviation sector as a whole.

It is regrettable that the economic research on the value of General Aviation is not up to date, as such research would enable the CAA to ensure that it is regulating the industry proportionately, and allow for trends in GA to be monitored.

Recommendation 1: Gov't should carry out regular economic research should be conducted into the value of GA to the UK economy

1.3. RECENT TRENDS

In order to identify issues facing GA, it is helpful to be able to analyse recent trends. However, whilst the CAA publishes some data regularly, there are some difficulties using these datasets to form firm conclusions about trends in GA. Where data is available, it gives a mixed picture of the health of the GA sector, with declines in some of the largest areas of GA activity.

For example, licence applications can be used as an indicator of how many new pilots are coming into GA, even though they cannot be used as an indicator of how many of those pilots are remaining active after qualification.

[2] Strategic Review of General Aviation 2006 - http://www.caa.co.uk/docs/33/StrategicReviewGA.pdf
[3] The economic impact of business aviation in Europe, 2008
[4] http://www.ons.gov.uk/ons/dcp171778_316228.pdf

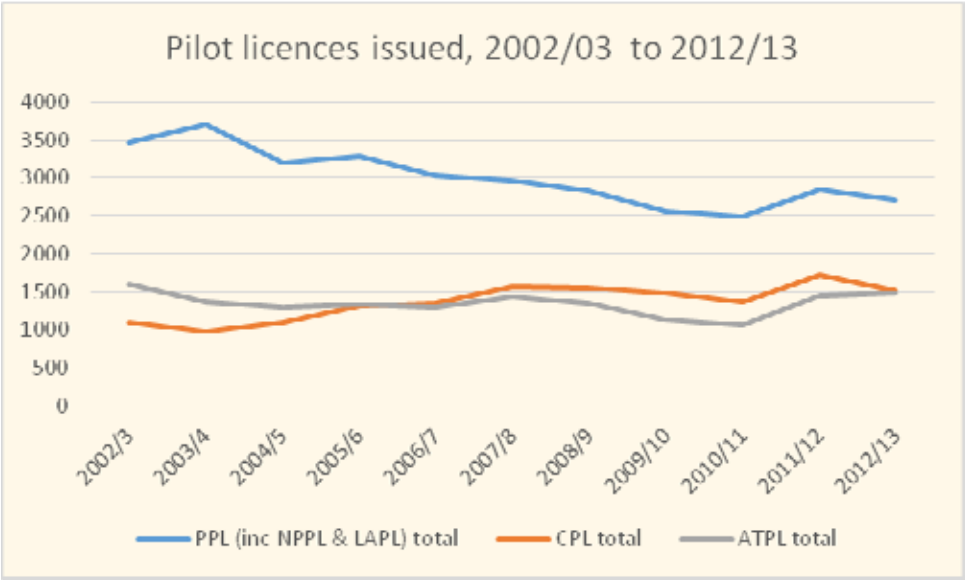

Figure 1, Pilot licence issues by type 2002/2003-2012/2013. Source: CAA[5].

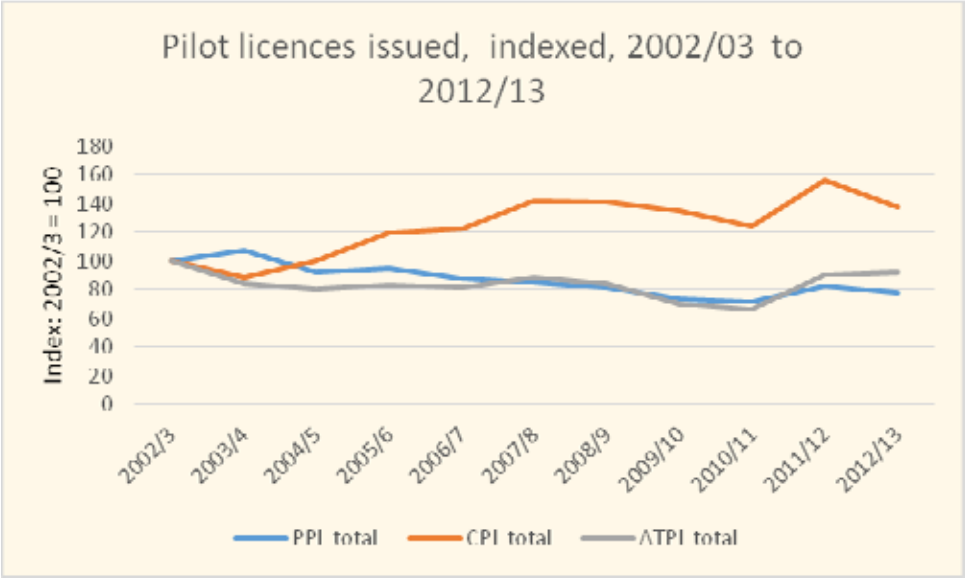

Figure 2, Pilot licence issues by type, indexed, 2002/2003-2012/2013. Source: CAA[6].

There has been a decline in the number of private pilot's licences issued, suggesting fewer new pilots are joining the GA community each year. The decline predates the recent recession, though numbers have levelled off in recent years. In comparison, the number of commercial licences issued have increased over the last decade, though this has levelled off in recent years. Note that just because a licence was issued by the CAA, this does not mean that the new pilot undertook their training in the UK.

The decline in PPL licence issues must be seen in the context of the wider UK economy, but also in light of the costs of obtaining a PPL and then flying an aircraft. Information provided to the Panel from Flyer Magazine suggests that the cost of training for a UK PPL in the UK has, after adjusting for inflation, risen from around £5,000 in 1995 to around £7,500 in 2010, an increase of about 50%. In

[5] http://www.caa.co.uk/default.aspx?catid=175&pagetype=68&gid=2069
[6] http://www.caa.co.uk/default.aspx?catid=175&pagetype=68&gid=2069

contrast, after adjusting for inflation, the costs of training for a PPL in the USA has stayed at around £3,000. Over the same time period, UK self-fly hourly rates have risen from around £115 to around £135.

Another indicator of GA activity is the number of hours flown by GA aircraft on the UK register. It is difficult to obtain accurate data on this without taking measures to record individual aircraft hours that may be disproportionate to the value of the data collected. However, the CAA uses estimates of hours flown in calculating safety statistics such as fatalities per 10,000 hours flown. These estimates were provided to the Panel.

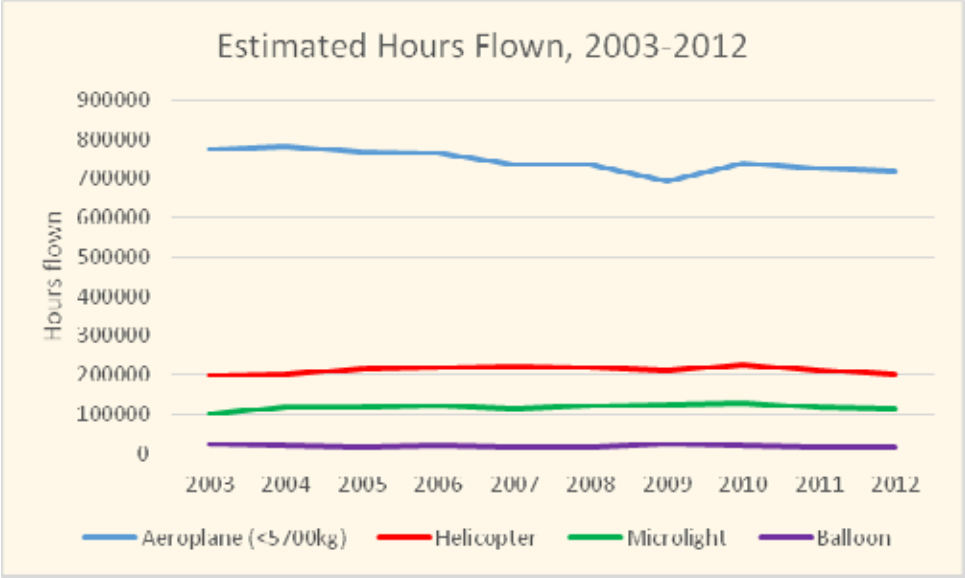

Figure 3: Estimated Hours Flown, 2003-2012. Source: CAA

It is easier to see the trend in each type of craft when the data is indexed.

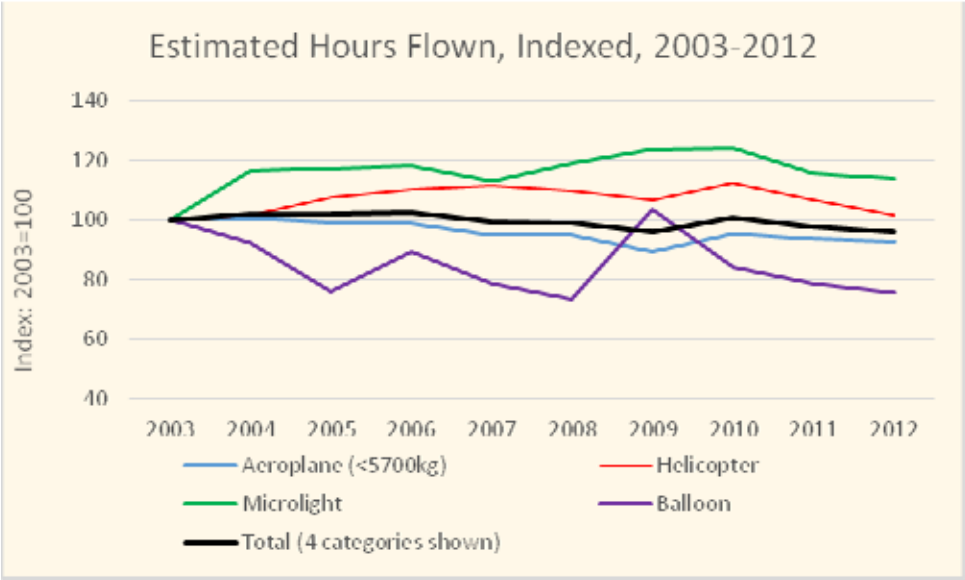

Figure 4: Estimated Hours Flown, Indexed, 2003-2012. Source: CAA

The trends here are mixed. Balloon activity fluctuates considerably year on year, and there appears to have been a recent fall in helicopter activity despite earlier growth. A key part of GA activity is

fixed-wing aeroplanes (MTOW <5700kg). In the past decade, there has been a decline in hours flown by these aircraft, with 7% fewer hours flown in 2012 than in 2003. In comparison, microlight aircraft has seen an increase in hours flown over the same time period, though much of this increase occurred between 2003 and 2004, and there has been a fall in microlight activity in recent years. It is worth noting that microlights are one of the lowest cost and least-regulated forms of GA activity. As noted above, this data is based on estimates, so we need to be cautious about drawing definitive conclusions from these figures. But it does seem to support other input and discussions the Panel has had with GA Industry representatives both individually and collectively, that UK GA has been under pressure with reducing activity in some key sectors.

Trends on GA activity can be compared with trends in the wider aviation sector. Commercial air traffic at airports which report to the CAA (mostly airports with an emphasis on commercial air transport) saw a long term increase to a peak in 2007, before falling off as a result of the recession and the 2010 ash cloud. Since then, numbers of terminal passengers have again been increasing.

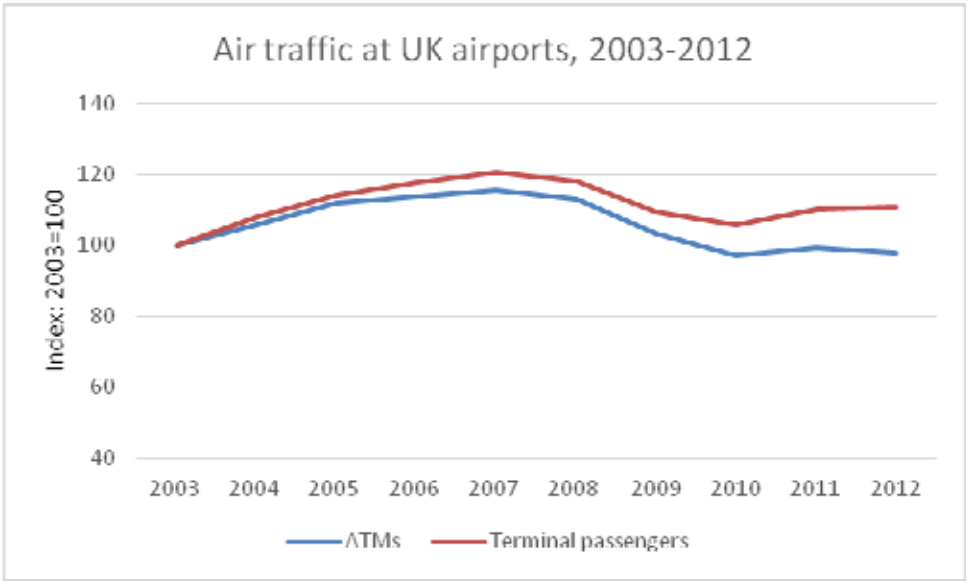

Figure 5: Air traffic at UK airports, Indexed, 2003-2012. Source: CAA

Meanwhile, potential for greater activity in the GA sector is shown by the fact that there have not been significant declines in aircraft on the UK register.

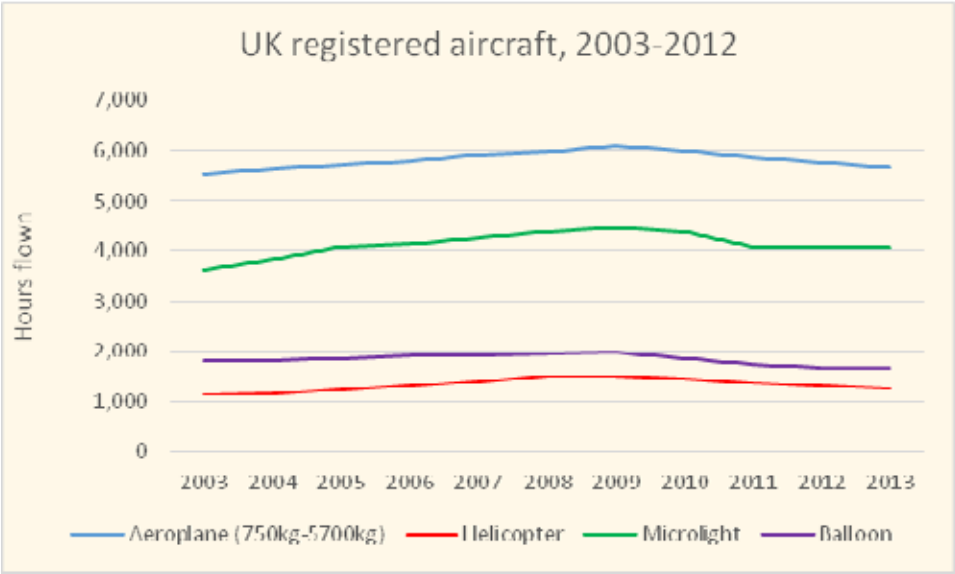

Figure 6: UK registered aircraft, 2003-2012. Source: CAA[7]

Again, indexing these values shows recent trends more clearly.

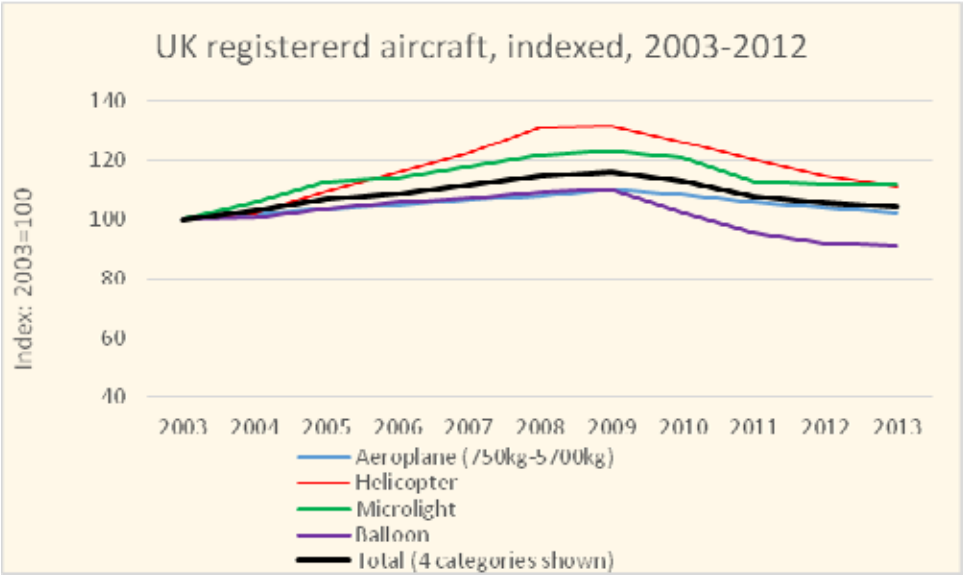

Figure 7: UK registered aircraft 2003-2012, indexed. Source: CAA[8]

The evidence is of a downward trend in the number of aircraft registered in the UK since about 2008, i.e. since the recession following the recent financial crisis. However, the CAA suggest that one factor contributing to the decline in aircraft in the register may be an increase in the identification of inactive aircraft and their removal from the register. Simple numbers on the register do not show the whole picture of GA in the UK. There is evidence of rising numbers of foreign-registered GA aircraft being based in the UK[9], but no accurate current figures on how many such aircraft there are. And the evidence in 2006 was that the GA fleet was ageing, suggesting that numbers on the register do not reflect investment in the fleet.

[7] http://www.caa.co.uk/default.aspx?catid=56&pageid=107
[8] http://www.caa.co.uk/default.aspx?catid=56&pageid=107
[9] CAA Strategic Review of General Aviation 2006,

Issues facing GA generally can be illustrated using gliding as a case study. Figures provided by the British Gliding Association show a decrease in hours flown and membership when you compare figures for 2003 and 2013.

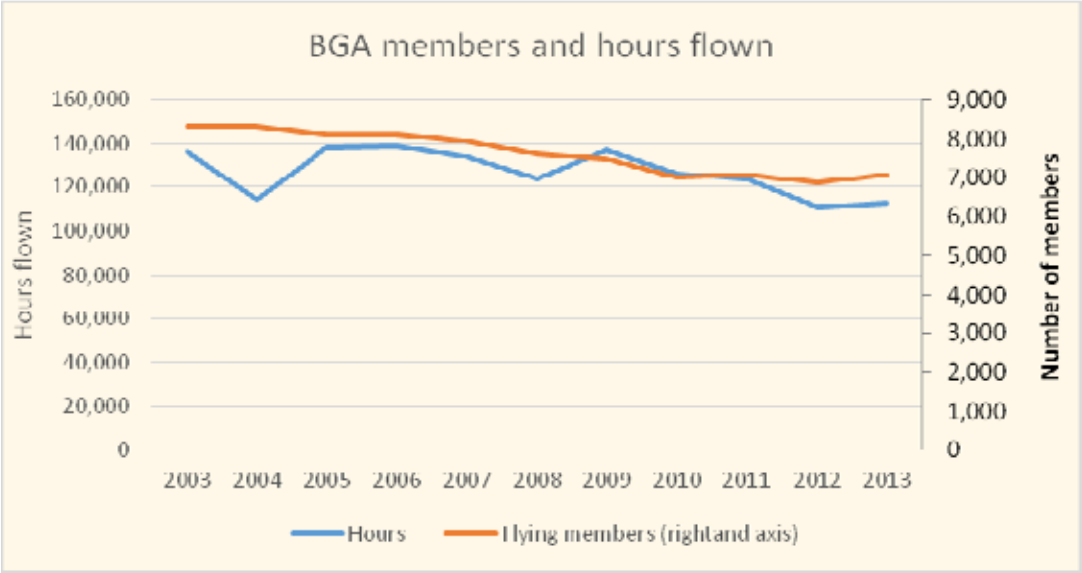

Figure 8: BGA hours flown and membership, total. Source: BGA

The downward trend since 2003 reflects the longer term picture. Comparing figures from 2013 with BGA figures from the early 1990s, we see a 25-30% decrease in both membership and hours flown.

Various factors may be contributing to this trend. Some are social – for example, it is reported that there has been a downturn in the volunteering ethos that associations like the BGA thrive on, and there has been a decline in military gliding clubs following post-Cold War military restructuring. Another issue is cost. BGA members report a 50% increase in maintenance and certification costs since the change to Part-21 and Part-M, and they worry about an increase in costs following the introduction in April 2015 of pilot licensing and ATO regulation.

Increased cost of complying with regulation corresponds to increasing regulatory complexity. Repairs or modifications to a glider could previously have been made by anyone following an assessment by a BGA expert. The same repair now requires permission to be granted through a more complex regulatory route. And equipment that could previously be replaced as needed now must be replaced at a frequency influenced largely by the manufacturers of that equipment. Increased regulation has made what was once a very simple form of aviation much more complex (though it is still relatively simple compared to many other GA activities).

This increased complexity may have detrimental safety effects. The Air Accident Investigation Branch has recommended certain safety adaptations (ensuring that full aileron can be applied and release facilitated) following a fatal accident. The BGA report that in the past that they could have provided a simple cable redesign in a matter of days, But the system now requires glider manufacturers to be involved in the modification process, and as a result these safety modifications will be delayed and may not ever get made.

The BGA's view is that increasing regulation is disproportionate, adds nothing to safety, and risks driving participants from the sport.

Returning our focus to the sector as a whole, we might ask what explains the mixed picture of GA activity. With the data available, it is not possible to identify the exact impact of individual factors. But it is very likely that a combination of several causal factors explain the overall picture. One factor is economic – in recent years, the UK has experienced recession and slow growth, and households have seen disposable income squeezed. At the same time, the costs associated with GA have increased. Part of this is the cost of fuel. Limited current data is available on trends in the price of Avgas, but the price of unleaded and jet fuel may be used as a proxy. There has been an increase in the price of these fuels of over 300% since 2000. The current purchase price of AVGAS is around £2 a litre.

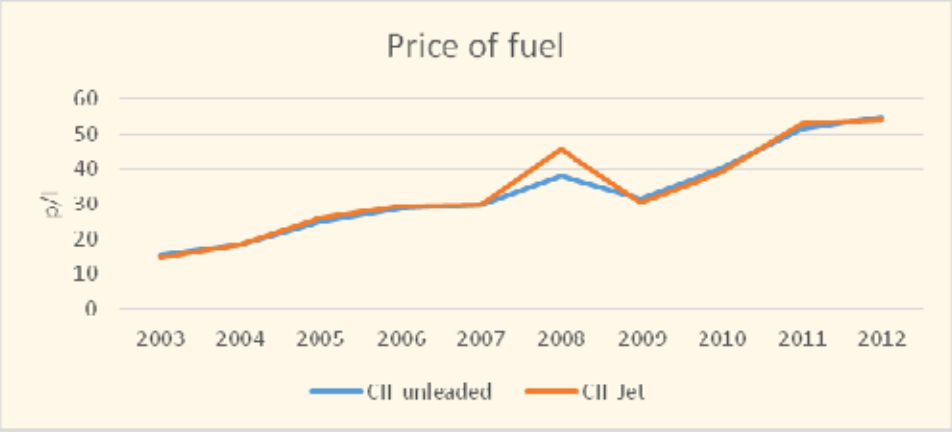

Figure 9: Price of CIF unleaded and CIF jet 2002-2012. Source: DECC

Some of the increase in costs are due to factors beyond the Government or CAA's control. Other burdens, such as taxation on fuel and on training, may be able to be lessened by the Government. And it is reported that a significant increase in costs come from the cost of regulation – that is from CAA fees and charges, but more significantly from the costs associated with complying with regulation and providing evidence of this compliance. The Panel is aware of some GA maintenance organisations increasing their hourly charges by 50% in order to meet the resource requirements from regulatory compliance. The evidence of growth in annex II aircraft activity might be seen as evidence for the appetite for GA, suppressed by the higher costs and regulatory burden associated with many other kinds of aviation. The Panel will report further on cost issues in its final report.

Despite of limitations of the data available, it is apparent that work is needed to reverse certain downward trends, to grow GA, and to make the UK a world leader in GA.

A summary of the Panel's views of the Strengths, Weaknesses, Opportunities and Threats (SWOT) facing the UK GA industry is given as an Appendix.

1.4. MEASURING THE SUCCESS OF THE GA PROGRAMME

Considering the data available on GA reveals that it is difficult to form clear judgements about trends in GA because there is relatively little reliable data available, and some data that one might expect the CAA to have access to, for example the hours flown by individual pilots recorded in medical examinations are not fully compiled or analysed, and thus are not available to inform policy.

Recommendation 2: the CAA should collect data on GA in a way that balances proportionality in the cost and burden of collection with the need to have a sound evidence-base when making regulatory decisions.

Recommendation 3: the CAA should, where possible and proportionate, analyse and make available the data on GA it collects.

The Panel's terms of reference ask it to consider measures of success for the GA programme. There are multiple potential measures, targeting themes such as the health of the sector, lowering regulatory burden, and maintaining adequate safety standards. It may be that rather than choosing a single metric for success, it is better to choose a range of metrics reflecting different elements of the programme.

There are also multiple issues to take into account when choosing metrics for success.

- Whether the metric is sufficiently outcome focused to measure success
- Whether the data is robust
- Whether there is historical data to act as a baseline
- Whether the data can be collected without disproportionate additional cost
- Whether using this metric could create unintended consequences

Although there are data gaps highlighted elsewhere in this report, some data already gathered may be part of the evidence base for measuring the success of the GA programme.

Hours flown each year by G-reg aircraft: The CAA currently collect data on hours flown by UK registered aircraft, broken down by type of craft. This can be used to estimate total hours flown by GA, and average hours per type of aircraft. This can be used to identify trends in activity levels, and therefore in the health of the GA sector.

Number of aerodromes: licensed and unlicensed: At present, only data on licensed aerodromes is collected by the CAA. We suggest that the CAA or commercial magazines may be in a good position to collect data on unlicensed aerodromes. This measure will enable tracking of impact of any threats to aerodromes, and of any changes in their planning designation (discussed elsewhere in this report). Collating the number of movements at such airfields would also be helpful.

Safety metrics: Currently, data on airprox incidents, fatal incidents and airspace infringements is published. It would be helpful to continue to consider this data to understand and respond to any changes in the risks associated with GA.

CAA charges to the GA sector: CAA charges to the GA sector can be monitored to ensure these costs represent good value for money.

In addition, it may be possible to use the proportion of aircraft that are based in the UK but registered outside the UK, or movement between the UK and non-UK registers as evidence of success in the CAA's deregulation programme. As noted earlier, numerous aircraft operating out of the UK are registered outside the UK. This is because there are often certain cost and instrument-rating advantages to registering on the USA's or Isle of Man's registers. If the CAA is successful in lessening the regulatory load, it may attract aircraft owners back to the UK register.

However, this measure can only be used for regulation relating to those kinds of aircraft which are able to be operated out of the UK on a non-UK register, and the number of such aircraft may be subject to change if regulatory requirements change such that fewer aircraft are permitted to be based in the EU whilst on the N-reg. Additionally, the data is not collected at present by the CAA, though some information on this is collected by industry magazines. The advantages of using this measure as a success metric should be considered against the costs and regulatory imposition that would be required in order to collect the necessary information.

Another option for measuring GA programme success is impact assessment of regulatory and deregulatory measures taken by the CAA and EASA. This report raises questions about the value of figures published in impact assessments. However, effective impact assessments could be used to measure the burden on regulation on the aviation sector. If there is a proportionate means of identifying what proportion of this burden fell on the GA sector, this would be particularly helpful.

A further option would be to consider the number of medicals issued of all types. This may be used as an indicator of the number of active pilots there are for some classes of pilot licence. However, this will not take into account activity for pilots who fly GA activity using commercial licences with relevant endorsements.

Recommendation 4: ***GA programme success should be measured by outcome focussed, robust data that can be proportionately collected or is already collected but not analysed, and can be used as a metric without creating unintended consequence***

Recommendation 5: ***the CAA GA Unit should consider a range of measures for success (including hours flown, aerodrome numbers, safety levels, charges to the GA sector, the proportion of craft operated from the UK not on the UK register, impact assessments, and pilot medicals), and regularly publish data on several different measures of success.***

It would also be valuable to monitor the success of the GA programme using qualitative as well as quantitative measures. For example, the CAA could publish an annual report of activities undertaken that will change the cost or burden of compliance for GA. This may include regulatory change, or adapted processes (for example digitising forms).

Recommendation 6: ***the CAA publish an annual report of activities undertaken that will change the cost or burden of compliance for GA.***

2. GA REGULATORY REFORM

The Panel considers a significant part of its role to be an assessment of the CAA response to the GA Red Tape Challenge set out in CAP 1123. The Panel has focussed on reviewing the submissions to the GA Red Tape Challenge, alongside CAA and EASA regulatory materials, and other relevant material received from individuals and organisations. For the interim report, the Panel has had limited dialogue with the CAA, and in the second phase of work we will engage further, in order to understand the way the CAA intends to implement effective and sustainable (rather than 'sticking-plaster') changes, and identify the barriers to better regulation.

This section sets out the work the Panel's current assessment of the opportunities for regulatory reform by CAA and EASA.

2.1. CAA REGULATORY OVERSIGHT

2.1.1. OBJECTIVES

A balanced approach to safety management requires a regulator to consider not just the safety of those exposed to risk but also the economic health of the industry being regulated. Excessive target levels of safety will result in the regulated industry contracting and becoming uncompetitive in a global market. The need for a balanced approach is particularly important, given the CAA's aspirations to deregulate and to adjust its own risk appetite.

The CAA's priorities are set by the Secretary of State, and include putting consumers' interests at the forefront of its regulatory decisions. Interpreted too narrowly, the CAA may focus on only the interests of the consumers of commercial aviation, forgetting that participants in GA are themselves, as participants in GA, consumers of aviation services. Failure to appreciate the interests of participants in GA might create challenges to the introduction of the necessary and welcome developments proposed in CAP 1123.

The draft Deregulation Bill would allow the CAA to be given a duty to have regard to the desirability of promoting economic growth, with regard to its non-economic regulatory functions. As noted in the 2008 Strategic Review of the CAA,[10] a stronger role to promote the business of the aviation industry would be incompatible with the CAA's duties as a regulator.

Recommendation 7: the CAA be given a duty to have regard to the desirability of promoting economic growth, and for the CAA to consider opportunities for GA to contribute to economic growth when carrying out that duty.

Similarly, EASA's mandate to achieve a high and uniform level of safety, without any balancing consideration relating to economic growth, has been criticised by stakeholders as unbalanced. To address this the European Commission has proposed an amendment to EU legislation to add an objective:

10 http://webarchive.nationalarchives.gov.uk/+/http:/www.dft.gov.uk/pgr/aviation/domestic/pillingreview.PDF

> *"to regulate civil aviation in a way that best promotes its development, performance, interoperability and safety in a manner proportionate to the nature of each particular activity."*[11]

This appears to be a sensible compromise for an enlightened regulator seeking to apply smart regulation.

Recommendation 8: The UK should support the European Commission's proposal to change EU legislation to give EASA objectives that balance safety, growth and a proportionate approach to risk.

2.1.2. FINANCE

The CAA is funded by the aviation sector, including by GA. The CAA's fees and charges to GA were raised by several respondents to the Red Tape Challenge, as was the CAA's requirement to provide a return on capital.

The Challenge Panel is currently discussing finance issues with Andrew Haines, the CEO of the CAA. The Panel feels that more transparency is needed on fees and charges, with clear justifications required for the level of charges. The CAA should be mindful of the fact that it is now operating in an environment in which some aspects of regulatory compliance can be met elsewhere, for example pilot licensing and use of foreign examiners to conduct flight tests. The CAA will need to be internationally competitive in its charges. The CAA is conscious of the need to meet high standards of service delivery. The Panel understands, for example that they are considering financial penalties if these standards are not met. The Panel welcomes this evidence of creative thinking about how best to incentivise effective culture change. The Panel is planning further work with the CAA on fees and charges before publication of the final report.

At present, the CAA is required to provide a 6% return on capital – higher than the 3.5% required from similar organisations. The Panel notes that the CAA has not always met this requirement. Nevertheless the fact that this requirement remains in place potentially limits CAA's flexibility in setting fees. In its response to a 2006 Transport Select Committee report, the Government promised to consider the views of the aviation industry on the 6% requirement.[12] As yet no review of the requirement has been carried out.

Recommendation 9: The Government should review the requirement that the CAA provide a 6% return on capital.

2.1.3. CULTURE CHANGE AND COMMUNICATION

Responses to the RTC highlighted dissatisfaction in the GA sector with CAA. It is sometimes seen as restrictive rather than enabling, imposing organisational requirements inappropriate for GA. For example, flight training organisations report that some flight instructors are spending half their time on EASA/CAA paperwork rather than on training students, even though their expertise and knowledge would be better employed maintaining standards and improving flight safety through

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11 http://ec.europa.eu/transport/modes/air/single_european_sky/doc/ses2plus/com(2013)409_en.pdf

12 http://www.parliament.the-stationery-office.com/pa/cm200506/cmselect/cmtran/809/80907.htm#note163

teaching. Certain CAA procedures are seen as simply unnecessary, for example the Panel was advised of the EU requirement of established pilot training organisations to have to register as ATOs, and so fill in forms and pay fees to carry on doing what they were already permitted to do, with resulting waste of time and increased cost. Other CAA practices were seen as wasteful, such as on occasions sending pairs of inspectors to undertake a simple audit of a flying school,

There is also some dissatisfaction with CAA staff. Examples were given to the Panel of cases where aerodrome inspectors have given conflicting advice about how to meet regulatory requirements, leading to unnecessary confusion and expense for the recipients of that advice. And examples were cited where CAA staff had insufficient knowledge of EASA rules, leading to misunderstanding and problems ensuring adequate compliance. Other industry representatives alerted the Panel to concerns that CAA staff were unable to keep up with the pace of regulatory change from Europe.

In addition, issues have been raised with how the CAA communicates with GA. CAA publications are not always clear. The Panel understands that CAP804 is currently being updated, but it stands as an example of a CAA publication that is not fit for purpose. And not enough is currently done to persuade the GA sector that changes in rules are not arbitrary. For example, in September 2013, the CAA removed the waiver enabling a UK PPL to be downgraded to an NPPL for medical reasons. This added significantly to the costs of pilots who wish to downgrade from a PPL to an NPPL, but the CAA has not done enough to explain its reasoning, and as a result the rule change appears arbitrary.

These criticisms signal the CAA's need to change its culture and communications.

The Panel welcomes changes that the CAA is making, such as setting up a dedicated GA unit. The objectives for the GA Unit are that it will:

- develop and adopt an evidence and risk-based approach proportionate to the risk appetite of participants while still ensuring protection of uninformed third parties;
- cut unnecessary bureaucracy, reduce disproportionate regulation and support and encourage the growth of a vibrant GA sector for the UK;
- develop a culture of transparency and openness and to support and educate the GA sector to encourage sustainable compliance and use legal powers only as a last resort; and
- improve communication with the GA sector, for example by providing targeted, relevant information in more accessible ways.

The Panel hopes that the formation of the new unit will see the CAA switching to a regulatory model that supports and encourages GA, and which works to facilitate compliance with proportionate and evidence-based regulation rather than simply placing limits on activity. Starting or expanding an aviation business, whether it be a flight training organisation, maintenance organisation or airfield, is a significant undertaking with regulatory compliance a major component of that. The CAA's fundamental approach should be to facilitate and support that regulatory compliance as much as possible, so that regulatory compliance does not hinder growth.

It is important that the culture change signalled by the creation of the new GA Unit permeates throughout the whole CAA. Having a common and consistent culture is fundamental to the job of the CAA, but it is vital that good intentions about culture change in the higher ranks of the CAA translates into behavioural changes throughout all levels of CAA staff, so that there can be consistent and proportionate regulatory oversight.

Recommendation 10: the CAA should work to ensure that positive changes in its culture of GA regulation permeate throughout the organisation.

The Panel hopes that the CAA will avoid arbitrary changes to rules, and will work to communicate better with the GA sector, making its website and communications clearer, and refining its consultation process to ensure appropriate consultation with GA. Consultation should be more than just meeting industry groups – it should lead to CAA staff to gain and a greater understanding of key issues facing the industry.

Recommendation 11: the CAA should work to communicate clearly with the GA sector in developing and communicating regulatory decisions.

Recommendation 12: the CAA should establish regular meetings between the CAA CEO and senior staff and frontline GA practitioners to improve communication between the CAA and those it regulates in discussions of the impact of CAA regulation and oversight.

Clearer communication with the GA sector should avoid the development of misconceptions about regulation. The Panel is committed to participating in a "myth busting" process to remove existing misconceptions, and will do further work with the CAA on "myth busting" before the final report is completed.

At present, for a large proportion of the General Aviation sector the UK is in the process of transitioning from national legislation to EU legislation. This transition has led to significant confusion among UK stakeholders. Many are either not aware of the new regulatory system, do not understand their changing obligations, or are baffled by what often appears to be vague or poorly drafted regulatory material. This leaves the CAA with a dilemma: if it interprets the EU regulatory material, it leaves itself open to an accusation of gold-plating it, while if it simply presents the material without explanation, stakeholders remain confused.

Recommendation 13: the CAA should focus efforts on explaining the EASA regulatory framework and the rationale behind it, using links to the original regulations where feasible.

Communication, clarity, culture and communication remain key areas for action and attention. Further engagement with the CAA on this topic is planned.

2.2. SAFETY REGULATION PRINCIPLES

Much of the CAA's role is as a safety regulator, and many of the issues that arise in the RTC relate to safety regulation policies. It is therefore important that the policies applied to safety regulation are in line with modern safety regulation practice, consistent, proportionate and clear. They also need to be compatible with the principles applied at a European level. In this section we discuss a number of aspects of safety regulation principles in the context of the RTC and the CAA's response.

2.2.1. TOTAL SYSTEM SAFETY

It is a generally accepted principle of modern safety management that it is impossible to eliminate risk: a regulator can only minimise it to optimise total system safety, subject to imposed constraints such as the total available resource. And the optimisation process may improve safety with respect to some types of risk, but lower it with respect to others.

For example, introduction of a new technology may overall reduce the number and severity of safety incidents, but failure of that technology on one occasion might lead to an incident that would not

have happened had that technology never been introduced.[13] Similarly, a lowering of certification standards may improve the affordability of safety equipment that assists in prevention of accidents, but also increase the risk of such equipment failing at a critical time and causing an accident. Such a trade-off is an inevitable component of good safety management.

As a consequence, any regulatory change that increases total system safety may (and usually will) permit or cause some accidents that would not have occurred in the absence of the change, even though overall accident rates should improve.

Unfortunately, both the civil legal system and human nature tend to work against this aspect of safety management. The few accidents caused by a change that improves total system safety attract attention, and third parties will attempt to attribute blame and in some cases civil liability. By contrast, the accidents prevented by the change go unnoticed, except in the overall safety statistics. Thus an individual who is part of the regulatory system may well ask the question, "why should I take responsibility for this change, when I will get little credit for the benefits it brings, but will be blamed for any accidents that result?"

The CAA's reform programme for GA regulation will increase some types of risk for GA, while raising overall system safety. CAP 1123 makes the point that:

> *"Crucial to the success of both options will be the risk appetite of the CAA, other parts of Government and the sector itself."*[14]

The factors identified above will have a significant effect, unless the legal framework for regulatory decision making supports and protects individual decision makers. Cultural and organisational changes need to go hand-in-hand with increased risk appetite. Unless individual decision-makers are protected against the change in risk exposure associated with good safety management, any good intentions expressed during the RTC process will be merely aspirational.

Recommendation 14: the CAA should set out the cultural and organisational measures it will take to protect and reward good management of total system safety in accordance with the risk-based proportionate approach.

Recommendation 15: the Government should ensure that the legal framework supports good management of total system safety in accordance with the risk-based proportionate approach, and protects individuals from civil liability where they make decisions in accordance with that approach.

2.2.2. RISK DIFFERENTIATION

The CAA has stated that regulation will be risk-based, in the sense that the likelihood of a safety incident and the risk-appetite of participants will be taken into account. Among the objectives of the new unit is the objective to:

> *"develop and adopt an evidence and risk-based approach proportionate to the risk appetite of participants while still ensuring protection of uninformed third parties"*[15]

[13] Taking an example from commercial aviation: it could be argued that in the absence of TCAS, the Überlingen mid-air collision in 2002 would have been avoided. But this needs to be assessed against the numerous other collisions that may have been prevented by the introduction of TCAS.
[14] CAP1123

This is clearly compatible with the approach taken in the European General Aviation Safety Strategy and Roadmap for Regulation of GA. In considering the level of regulatory protection required, the equivalent European principles consider the ability of all those who are exposed to risk to assess and control that risk. The Panel supports this approach.

As examples:

> *"The CAA is developing, with the aviation industry, a regulatory framework using the principle of 'Informed Consent' which would allow organisation to conduct certain revenue-generating 'promotional flights' within a club environment. The CAA believes that such measures will, when implemented, provide participants and uninformed third parties with proportionate protection and reduce the risk of misunderstandings in this area*[16]*"*

This is a sensible development. As a result of lobbying from the GA community and Member States, including the UK, the European Commission also recently introduced a number of derogations into the EU regulations on Air Operations to allow certain types of revenue-generating operation to be considered non-commercial.

Recommendation 16: the CAA should work with the European Commission and EASA to ensure that the UK framework for the regulation of promotional flights is consistent with the European framework, and to develop a common understanding of 'informed consent'.

In order to make the application of a risk-based approach consistent across the many areas of regulation (e.g. airworthiness, equipment requirements, pilot competence, medical, operations) over which such risk is spread, it is important that decision making across all these areas is itself consistent. Thus qualitative or subjective measures are rarely sufficient, as they do not allow for adequate comparison of different measures.

One way of achieving this to ensure that there is a clear, quantitative target level of safety (or conversely, allowable level of risk) against which potential regulatory interventions can be assessed. If the risk is much lower than the target level, or if a potential mitigation delivers a reduction of risk that is insignificant compared to the target, regulatory intervention is not justified. This approach is used in certification in the FAA's AC 23.1309,[17] which is consistent with EASA and CAA methodology. It sets allowable probabilities (to the nearest order of magnitude) for failure conditions of various types, some of which may cause accidents or hull losses.

Clearly, these allowable risk levels should vary according to stakeholder class: the highest target level of safety should be applied for uninvolved third parties, and the lowest for the informed pilots of private flights. In the absence of such safety benchmarks, resources may be wasted attempting to make marginal improvements to safety in one area where it would be more effectively spent elsewhere on an issue in which the risk appetite of those concerned is lower, or where the actual safety dividend is higher. Note that these allowable risk levels should not be used as overall safety performance targets. At present it appears that the level of risk from GA is at a level that does not concern the public or UK Government.

FAA's AC 23.1309[18] contains a helpful methodology for further work on this, although it classifies probabilities (for certification purposes) only by aircraft class, and so in order to be fully consistent

[15] CAP1123
[16] CAP1123
[17] http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%2023.1309-1E.pdf
[18] http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%2023.1309-1E.pdf

with the principle of varying allowable risk by stakeholder class, the nature of the aircraft's operation and the stakeholders exposed to risk would also have to be taken into account.

Recommendation 17: the CAA should develop clear, quantitative target level of safety (allowable risk levels) for each different class of stakeholder exposed to risk, against which potential regulatory interventions can be assessed. It may be necessary to specify a marginal expenditure of resource to be compared with the risk (e.g. the Value of Preventing a Fatality) for stakeholders with little or no control over their risk exposure.

The CAA's response to the RTC states that:

> *"In September a cross-CAA project team consulted with industry on proposals for a new risk-based policy which will allow applications for GPS Instrument Approach Procedures (IAPs) to be submitted by operators of some aerodromes which do not meet the current (Air Navigation Order Article 172) requirement for an Approach Control service to be provided. The CAA recognises that the UK lags significantly behind other countries in this area and will ensure that maximum advantage is taken to introduce such Instrument Approach Procedures wherever possible."*[19]

The Panel welcomes the new risk-based policy. It notes that in the consultation document, the standard of risk to be applied is 'as low as is reasonably practicable' (ALARP). The ALARP standard is common in health and safety management, but may be open to misinterpretation. Again, we emphasise the need to set different target levels of safety for different categories of operation.

2.2.3. COST-BENEFIT OF OVERSIGHT

Deregulation is a key principle of the CAA's new strategy for GA. One of the CAA's two guiding ambitions for future work on GA is "deregulate wherever possible".[20] And among the new GA unit's objectives is the objective to:

> *"cut unnecessary bureaucracy, reduce disproportionate regulation and support and encourage the growth of a vibrant GA sector for the UK"*[21]

Deregulation may be seen on one of two levels. In its extreme form, it might be the removal of all rules relating to an activity. But it may also simply be a removal or reduction of associated certification and approval requirements. For most stakeholders, it is the certification and approval requirements that represent the greatest burden: this *is* the red tape. The existence of reasonable rules, with which they are trusted to comply, is not the issue.

Oversight measures range from advanced approval and certification processes required legally to enable a privilege or capability, through to checks that rules have been complied with in the form of audit and enforcement. Any oversight measure has an associated cost, and also an associated benefit to total system safety.

Most aircraft and their parts are certified while pilots and engineers are licensed. Increasingly EU regulation requires organisational approvals, for example for design, production, maintenance and training organisations. Certification and approval often appear to be providing a safety benefit in their own right, but the reality is more subtle. Approval is granted to persons who demonstrate that

[19] CAP1123
[20] CAP1123
[21] CAP1123

they meet a set of requirements, but the requirements would be legally enforceable even if there were no requirement for approval.

Post hoc compliance monitoring is usually an alternative to *a priori* approval. So, for example, if the currency requirement for a PPL holder flying an SEP is (simplifying, for illustration) to have flown for 12 hours in every second year, adherence to the requirement might be checked post hoc by random inspection or by checking when an incident occurs. However in fact, the law insists on the intervention of an examiner to check and certify that the requirement has been met, and revalidate the SEP rating. By contrast, there is no legal insistence on this intervention for a LAPL, which allows the pilot to monitor his own compliance with the currency requirement (FCL.140.A LAPL(A) – recent requirements[22]). It is just as unlawful for a LAPL holder to fly in contravention of the LAPL currency requirements as it is for a PPL holder to fly without a valid SEP rating. So it could be argued that examiner's intervention serves no useful purpose.

Similar considerations apply to organisational approvals and certification of products against standards or codes with which they must comply. There are two benefits delivered by certification and approval processes:

1) An approval allows a stakeholder to have **confidence** that requirements have been met. So for example when an operator purchases a certified product such as an aircraft, he will look to the certification documents for assurance that the aircraft has been built and maintained to the required standards, based on the credibility of the certifying authority. The purchaser of an uncertified product has no such assurance, and must either take the vendor on trust, or take steps to assure himself / herself as to the product's compliance with the required standards. Where many products have been built to a common design, certification clearly brings an economy of scale: a single verification by the certifying authority may substitute for many individual investigations by different stakeholders. And stakeholders such as insurance companies may also value certification.

2) An approval allows expert judgement to substitute for very complex rule-sets in situations where there is **complexity**, interdependence with other processes, or simply a lack of operational experience that would be required to write an effective rule-set. So in many situations, such as approvals of large organisations, there may be a need for the party seeking approval to interact with the certifying authority to resolve complexities, rather than having a rigid set of requirements. The larger and more complex the organisation, the more cost-effective such an interaction is likely to be.

Where certification or approval serves one of these purposes, it may have a favourable cost-benefit. But the experience of regulated parties, in particular SMEs, tells a different tale:

1) There is no economy of scale associated with certification and approval because the products and organisations certified are readily evaluated by individual potential customers and other stakeholders on a case by case basis. For example, a good working relationship may be more important in a successful and safe maintenance relationship between a pilot-owner and a small maintenance organisation than most of the criteria (e.g. "Office accommodation is provided for the management of all planned work"[23]) used for an approval. Similar considerations apply to the selection of a GA training organisation, where an experienced, independent instructor may deliver a better training experience than an organisation with "adequate briefing room(s)/cubicles of sufficient size and

[22] https://www.easa.europa.eu/rulemaking/docs/npa/2008/NPA%202008-17b.pdf
[23] M.A.603(b) - http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:315:0001:0165:EN:PDF

number".[24] Alternatively, stakeholders may be able to use certification and proven track-record from third-countries, such as the USA, in making their decision, rather than placing any reliance on additional European or UK certification processes.

2) The cost (in time and fees) of the interaction with the certifying authority is not justified by complexity, and the authority has in fact just checked that there are "ticks in all the appropriate boxes", without adding value in the form of expertise. For simple organisations seeking to meet unambiguous, straightforward requirements, such interaction is pointless.

Recommendation 18: the CAA should carefully consider the cost-benefit of all certification and approval processes over which it has discretion, and apply criteria of cost (including compliance costs and time, as well as fees) vs benefit (including confidence and complexity factors) to decide if certification/approval is warranted.

Recommendation 19: where EU regulation requires certification or approval that is not supported by a favourable cost benefit, the CAA should apply the lightest possible touch to such processes to minimise compliance burden, and where appropriate, lobby for changes to the EU regulation.

If disproportionate certification and approval processes such as those discussed above are removed, post-hoc oversight (enforcement) rises in significance.

> *"The CAA has a publicly available Regulatory Enforcement Policy which explains clearly to all those who interact with it how it will enforce its rules in a proportionate and targeted manner. The CAA will only seek prosecution through the courts in the most serious of cases. It is considering how it might make better use of civil sanctions, where appropriate, but first and foremost it seeks to bring the individual or organisation back into compliance in the most appropriate way."*[25]

The Panel supports this policy, and believes that criminal prosecution should be used only as a last resort, or where non-compliant behaviour has been wilful or reckless.

The recommendations on lowering the burden of certification and approval processes can be illustrated with two examples, permission for aerial work in foreign-registered aircraft, and certification of documents for licence applications:

PERMISSION FOR AERIAL WORK IN FOREIGN-REGISTERED AIRCRAFT:

Currently, operators of foreign-registered aircraft who wish to perform "aerial work" in the UK are required by Article 225 of the Air Navigation Order[26] to obtain a permission from the Secretary of State (a process currently operated by the DfT, soon to be transferred to the CAA). The broad UK definition of "aerial work" means that even those owners who wish to pay an instructor to provide training in their own aircraft need to obtain such a permission. The cost and administrative burden of obtaining such a permission is not insignificant, and it is appropriate to consider whether such a regulation offers favourable cost-benefit.

[24] AMC2 ORA.GEN.215 – http://www.easa.europa.eu/agency-measures/docs/agency-decisions/2012/2012-007-R/Annex%20to%20ED%20Decision%202012-007-R.pdf
[25] CAP1123
[26] http://www.caa.co.uk/docs/33/CAP393.pdf

The DfT has provided the Panel with data on the number of such aerial-work permits issued (and refused), together with a rationale for the requirement: an organisation might set up an aerial work operation (including a flight school) using foreign-registered aircraft to evade the standards of safety in UK law, therefore a separate oversight process is required.

It appears that permission is routinely granted for aircraft owners to receive instruction in foreign-registered aircraft. Such a process clearly adds nothing of value to oversight.

Recommendation 20: the government should, with immediate effect, issue a general exemption from the requirement to obtain permission for paid flight instruction to the owner (or joint owners) of a foreign-registered aircraft.

Permissions are usually granted for other types of aerial work, though occasionally the application process brings to light deficiencies in the applicant's proposals.

Since the requirement was originally put in place, a number of changes have been made to the regulatory framework applicable:

- under EU air operations law, flight training is conducted as non-commercial operation, not aerial work;
- all operators of non-EU-registered aircraft who are established or resident in the EU will be required to comply with EU operations and licensing rules for both commercial and non-commercial operations;
- flight training organisations offering training towards EASA licences will be required to hold an approval.

Each of these reduce the extent to which the regulatory framework can be exploiting by using foreign-registered aircraft to evade appropriate safety standards, suggesting that a review of the requirement is now due.

Recommendation 21: the government should review the value added by the current regulatory framework for aerial work in foreign-registered aircraft and consider entirely removing the requirement to obtain permission.

CERTIFICATION OF DOCUMENTS FOR LICENCE APPLICATIONS

When copies of some documents are submitted in support of licence applications, the CAA requires that the copy be "certified" as a true copy of the original. For example, the licence application page submitted to support a conversion of a licence to an EASA Part-FCL licence must be certified by "the Head of Training". It is unclear who, for many pilots who have held licences for years, "the Head of Training" might refer to, and the requirement has apparently been relaxed to allow the certification to be carried out by "a UK examiner".

The entire process is only necessary because the CAA has not, historically, recorded the revalidation forms sent to it in a database or equivalent log, and so requires the ratings page in order to know which valid ratings the pilot holds. This shift of administrative burden from the CAA to the user might itself be questioned, though when licensing processes are fully digitised, the point becomes moot as the page will no longer be required. While those processes are developed though, the ratings page is the only way that the CAA can verify the ratings claimed by the pilot.

Putting aside the issue that "Heads of Training" and examiners are not trained to identify forged documents, the "certification" process might at first sight appear a sensible precaution. But the

fallacy is that for "certification" to have authentication value, the certified version must have greater trustworthiness to the ultimate user of the certified document (the CAA) than the document being certified. Typically, this is because the certifier is known and trusted by the ultimate user, while the document being certified is not.

In this case, the document being certified bears the signature of an examiner confirming that a rating has been revalidated, and the certifying signature is also a signature of an examiner, in many cases the very same signature. If the CAA trusts one signature, why should not trust the other? Or conversely, if a pilot is prepared to risk the consequences in criminal law of falsifying the ratings page, why would they not simply forge the certifying signature?

Recommendation 22: the CAA should cease its practice of requiring certified version of documents submitted in support of licence applications.

2.2.4. IMPACT ASSESSMENTS

A number of stakeholders (e.g. RTC #1) are concerned about the cost-benefit of regulations. In its response in CAP 1123 Annex 1, the CAA reaffirms its commitment to impact assessments. We welcome this, but would caution against a box-ticking exercise.

An impact assessment needs to be used as a tool for comparing genuine options for different regulatory approaches. There is a suspicion among stakeholders that many cost benefit analyses and impact assessments (produced by both the CAA and EASA) have been post-rationalisations for the regulator's favoured position. The introduction of a mandate for Mode S transponders for traffic in the London Terminal Manoeuvring Area (TMA), described below, was one of these, and appeared to be based on unfounded assumptions and inadequate sensitivity analysis.

Traditionally, SSR transponders using 1030/1090 MHz interrogation/response, have provided a means for ATC to detect and track aircraft as a prerequisite to efficient management of airspace, developing to use 12-bit identification codes ("Mode A") and encoded aircraft altitude information ("Mode C"). As the use of SSR has increased, the frequency spectrum around 1090 MHz has become increasingly congested, leading to developments of SSR that provide selective response to interrogation as well as extra aircraft data ("Mode S").

These co-operative systems require interoperability between ground equipment and airborne equipment. For the introduction of new equipment, there is no benefit from investment in airborne equipment if the ground equipment is unable to make use of its functionality, and vice versa. The mechanism for synchronising investment has traditionally been by regulatory mandate. Cost-benefit is particularly critical in such regulation, and often requires assumptions to be made about future developments and demands.

A mandate for the carriage of Mode S equipment for all aircraft operating under IFR in the London TMA was proposed by the CAA in early 2004. It required an Elementary Mode S (ELS) equipage for lighter, slower aircraft, with an Enhanced Mode S (EHS) equipage (extra aircraft parameters to be down linked) for heavier or faster aircraft. The justification for ELS was based on a capacity argument, around the congestion of the RF spectrum and the shortage of 12-bit Mode A codes which would be alleviated by Mode S. The regulatory impact assessment for this mandate, which used a 1998 cost-benefit analysis by Eurocontrol, revised in early 2001, estimated the benefit of ELS throughout Europe to be £2.1 billion by 2017. A very significant proportion of this (40-50%) was attributed to benefits to

users of the UK in capacity and avoidance of delays, much of it through avoiding a shortage of Mode A codes based on the relentless growth of demand. As with most benefits associated with demand growth exceeding supply capacity, the sensitivity of the benefit to demand in the model used was very high, but not examined in the impact assessment.

Such a massive potential benefit made the cost of compliance, a mere £700 million across Europe, seem like modest price to be paid, principally by the airspace users on avionics. The UK therefore proceeded with its regulatory requirements for ELS and EHS, with forward fit and retro-fit a decade in advance of any corresponding EU mandate.

Rolling forward to early 2014: traffic levels are hovering around 2001 levels (though they did increase towards the middle of the decade, but never exceeded system capacity),[27] and unique Mode A codes are still allocated to all IFR flights within the UK ATS route network. While some peripheral benefits related to safety have been realised, in particular with EHS, the mandate for UK airspace users to upgrade early to costly Mode S systems does not appear to be supported by history.

No regulator has a crystal ball, but to the GA community in particular, the ELS mandate looks like very expensive red tape based on unfounded assumptions. The option of mandating only EHS for faster and heavier aircraft (which has safety benefits in addition to capacity benefits) was not evaluated, nor were other ways to restrict the scope of the mandate to mitigate disproportionate effects. And all stakeholders may now be disappointed that the cost benefit analysis vastly exaggerated the benefits by failing adequately to account for sensitivity to traffic demand.

With major changes in ATM (e.g. PBN, data-link, ADS-B) on the horizon in the context of the SESAR project and the Future Airspace Strategy, and constrained budgets for all stakeholders, it is imperative that regulatory mandates are very solidly grounded, and explore an appropriate range of options.

Recommendation 23: the CAA should use impact assessments to conduct a genuine exploration of options, not to justify simplistic make-rule vs do-nothing options.

Recommendation 24: the CAA should consider in all impact assessments strategies to mitigate the effects on GA, and small businesses, and on other classes of affected stakeholder for whom benefits may be limited and costs disproportionate.

Recommendation 25: where impact assessments depend on cost-benefit arguments, the CAA should a) pay particular attention to the sensitivity of costs and benefits to any assumptions made, particularly forecasts in relation to system capacity; and b) conduct a post-hoc review of the actual costs incurred and benefits delivered in practice to improve the quality and reliability of future impact assessments.

2.2.5. INNOVATION AND NEW TECHNOLOGY

The CAA's response to the GA Red Tape Challenge explicitly discusses innovation in GA, for example:

> *"The CAA's GA Programme is intended to help foster innovation in the GA sector by considering the potential. Initiatives already started include:*

[27] For an indication of traffic levels, see http://www.caa.co.uk/default.aspx?catid=80&pagetype=88&sglid=3&fld=2012Annual

- *creating a 'commercial experimental' aircraft category to facilitate proof-of- concept flight testing subject to professional competence and proportionate operational restrictions;*
- *simplifying processes for modification, changes and repairs;*
- *improving the substitution of obsolete or out of production materials;*
- *allowing certain Permit to Fly aircraft to fly at night and/or in instrument conditions if appropriately equipped; and*
- *simplification of the means to allow flights for test purposes (without a standard valid Certificate of Airworthiness/Permit to Fly)."*[28]

Specific innovation initiatives are discussed below, and we focus first on the general principles of managing risk associated with innovation in a regulated domain such as aviation. Many of the risk-management aspects described in the previous sections come into play. Adoption of new technology in aviation tends to follow a path of caution, for good reason. The stakes are high if an inadequately tested piece of equipment fails in service. Nevertheless, as in all aspects of safety management, there are trade-offs between the safety value of new technology and the associated risk; only by doing something differently will safety be improved. A case study is instructive.

The CAA's reluctance to adopt Global Navigation Satellite System (GNSS) technology has probably been the area that has most threatened the credibility of the CAA as a safety regulator with the GA community. The Global Positioning System (GPS) has been available as a navigation tool since the late 1980s. GPS receivers suitable for air navigation started to appear on the market in the early 1990s, and GA pilots rapidly realised their potential for improvement of situational awareness and reduction of cockpit workload.

On 17 February 1994 the US FAA introduced Phase 2 of its GPS Approach Overlay Program. This allowed pilots to use a TSO C-129 A1 GPS receiver to fly an overlay of an approach designed for conventional navaids. On 28 April 1994 Phase 3 allowed these approaches to be flown without any conventional navaids or on-board receiver avionics. Substitution of GPS fixes for NDB or DME based navigation was also authorised. As a consequence, most owners of US aircraft, including GA aircraft, disposed of ageing and unreliable conventional navigation equipment, in particular ADFs, and invested in modern GPS equipment.

By contrast, in the UK, regulatory acceptance of GPS has proceeded at a 'snail's pace'. Many UK GA pilots have used handheld GPS receivers as their effective means of navigation for VFR and IFR since the mid-1990s, in the face of warnings that it must not be used as a primary means of navigation. Even GPS receivers that are, in effect, required to meet airspace requirements for Performance Based Navigation still may carry a placard prohibiting their use as a sole or primary means of navigation.

In 2006, the UK CAA announced a trial of GPS approaches for General Aviation aircraft at six UK airports. Even after successful trials, it took several years before airports were authorised to use even these approaches because of difficulties establishing safety cases. There has never been an overlay program in effect. In December 2011, the UK CAA published AIC Y 107/2011 finally exempting aircraft from the requirement to carry an ADF as a prerequisite merely for flying IFR in controlled airspace. It notes however:

[28] CAP1123

> *"4.2 Precision or Non-Precision Approaches with Missed Approach based upon NDB*
>
> *The missed approach based upon an NDB is an integral part of the approach procedure and therefore an aircraft must be equipped with ADF to conduct the missed approach procedure."*[29]

Of the few GPS approaches now available in the UK, most, such as those at Gloucester, Blackpool and Cambridge use an NDB as part of the missed approach procedure. Aircraft flying the procedure must therefore be equipped with an ADF, even though for all practical purposes the equipment is likely to remain switched off while the missed approach is flown, with great precision, using GPS.

There is an unquantified hypothetical risk (perhaps better termed a "hazard" in standard safety terminology) associated with the substitution of GPS fixes for NDBs: the obstacle clearance criteria are, technically, different. However, the practical risk associated with such a substitution is, as proven, by experience in the USA, negligible. Yet in deference to this hypothetical risk, the benefits of the new technology are largely lost.

It not credible that the requirement for an ADF should be the result of an objective analysis of the balance between the risk associated with GPS fix substitution and the cost of continuing to carry ADF equipment in a serviceable state. That this remains the legal situation in the UK *two decades* after the FAA put its GPS Approach Overlay Program into effect (with no net safety issues) is a sad indictment of the appetite of the UK CAA to embrace innovation.

RTC #263 suggests that the CAA "Allow non-certified GPS to provide data for ADS-B out." The CAA replies:

> *"This proposal will be examined by the Airspace and Safety Initiative Electronic Conspicuity Working Group. The aim is to achieve a scaleable way forward to developing a technology solution which is affordable and appropriate to improving situational awareness for the GA community in less dense and low complexity airspace."*[30]

While the development of such a technology is important and welcome, this does not address the issue raised, which concerns the position data source for an existing ADS-B transceiver. With appropriate data quality information associated with the ADS-B messages, there should be no regulatory reason to object to non-certified data sources.

Recommendation 26: the CAA should review and update all policies on GNSS usage to address practical risk compared to the status quo, not theoretical risk against an arbitrary standard. It should also seek to accelerate the introduction of GPS approaches to a larger number of UK GA focused airfields.

ALTERNATIVE FUELS

Another key challenge that must be addressed by innovation in the near future is the use of alternative fuels:

> *The CAA permits the use of MOGAS in aeroplanes when qualified by the engine and airframe design approved holder.*[31]

[29] AIC Y 107/2011
[30] CAP1123
[31] CAP1123

Some stakeholders have found this an inadequate response to the issues of MOGAS and MOGAS containing ethanol (items 103, 104 and 170). Around the world, recreational and GA aircraft routinely use fuels containing ethanol. Even though there are hazards associated with such use, the level of practical risk may be acceptable for operations with a commensurate target level of safety. Thus it is possible that the precautionary approach (with the associated costs of requiring the more costly AVGAS) adopted by the CAA to date does not deliver a favourable cost-benefit for all operations. The Panel will review this in more detail in its next phase of work.

On the positive side the Panel notes the increasing availability of UL91 fuel and Shell initiatives to introduce lead free AVGAS. It is hoped that the CAA will allow an accelerated certification process for the latter.

Finally, innovations often require a modification to an aircraft. The CAA offers:

> *"One respondent suggested that the CAA does not allow silencers to be fitted without an expensive approval. This is a misunderstanding. If a silencer installation or any other modification has been previously approved by EASA or an EU member state before 28 September 2003, it can be installed on a UK aircraft without further approval"*[32]

The reply is technically correct, but fails to address the point that newer modifications do require such an approval. While for EASA aircraft this is a matter for EU regulation, the CAA needs to make modification to aircraft within its remit easy enough and cost effective enough to facilitate innovation.

Managing innovation via the regulatory process is not trivial. It requires an analysis of practical risk rather than hypothetical hazards, proper assessment of cost-benefit, and a feedback or review process that allows learning to be incorporated appropriately into regulation and best practice in a timely way. A precautionary principle (i.e. a requirement for proof that an innovation is safe, which may not be available in the absence of extensive operational data) may itself reduce safety standards by delaying or preventing the introduction of new safety technologies.

The next decade is likely to be, as a result of the SESAR program and the Future Airspace Strategy, very demanding on the introduction of new technology, such as ADS-B, datalinks and 4D trajectory management. Environmental concerns mean that the facilitation of new technologies, for example to reduce aircraft noise, is particularly important. If the UK CAA's risk appetite fails to adjust to the needs of the modern aviation environment, UK aviation will be left even further behind the rest of the world.

[32] CAP1123

Recommendation 27: the CAA should design policies and procedures for ensuring that:

- ***where possible innovative new technologies are assessed for benefit vs risk against current technologies on the basis of practical risk, not hypothetical hazard, using available information and data;***
- ***operational experience of new technologies can be incorporated into regulation in a timely and effective review process; and***
- ***due consideration is given to experience with such technologies in other, early-adopter states.***

2.2.6. INTERNATIONAL STANDARDS

Independently of its relationship with the EU, which is discussed in a later section, the UK has international obligations, in particular through its membership of the International Civil Aviation Organisation (ICAO). In contrast to EU regulations, which are directly applicable law, UK conformance to ICAO standards and recommended practices is not legally binding, and the UK has the option of filing a 'difference' with ICAO when it chooses not to comply with a standard.

Some differences from ICAO standards result in more restrictive regulation, some in less restrictive regulation, and some simply in different conventions. State differences from ICAO standards are notified in the GEN 1.7 section of the state AIP. As examples, France's GEN 1.7 runs to 42 pages, Germany's to 17 pages, Malta's to 4 pages. The UK's GEN 1.7 is 53 pages long, though this may reflect the UK's diligence in reporting even minor differences.

ICAO standards are often unfortunate compromises born of political expedience rather than objective safety optimisation. Sometimes, UK differences are helpful in enabling flexibility, where there is no risk that unfamiliarity with the 'UK way' causes confusion.

Generally though, harmonisation improves conformance by and certainty for stakeholders, as they only have to remember and comply with a single rule, not a different one for each state they interact with. Differences from standards, particularly in terminology or phraseology, may run the risk of confusion and miscommunication. Decisions to deviate from such standards should be taken only after careful evaluation of the safety advantage of doing so compared to those risks. In particular, with phraseology, Air Navigation Service Providers (ANSPs) and regulators used to dealing with a single ANSP may not be sensitive to the potential confusion for those familiar with different standards and conventions.

As an important example, RTC #246 asserts that radio phraseology is too complicated and urges the CAA to revert to ICAO SARPs. The CAA responds that "UK phraseology is in line with international standards". There are however, still numerous differences:

- The UK does not use the word "to" in an instruction relating to a flight level.
- The UK inserts the word "altitude" before an altitude.
- The UK uses the words "flight level wun hundred" (not "flight level wun zero zero") for FL100.
- The UK alone uses the words "freecall" and "continue with" to convey different information from "contact".
- The UK alone uses the terms "basic service", "traffic service" and "deconfliction service".

- The UK uses “descend with the glideslope” and only recently introduced the phraseology “cleared ILS approach”.
- The UK uses non-standard the phraseology “climb now” instead of “climb (level), SID level restrictions cancelled” in instructions related to the vertical profile of SIDs.

There is a sensible rationale behind most of these differences. If the options were considered a priori, without extant phraseology conventions, in isolation without harmonization considerations, the UK selected option might be considered useful or preferable in many cases. However, the existence of an international standard and the UK difference from that standard may lead to the potential for confusion. And the international standard appears to be used with acceptable safety levels in most or all other states.

The risk of confusion is particularly high for GA pilots. Commercial air transport pilots have operations and training departments who will ensure that they are familiar with these UK quirks, and the flight crews will fly sectors to the UK frequently, so becoming familiar with UK custom by exposure. By contrast, GA pilots have no such support, and may fly routes only once.

Recommendation 28: the CAA should carefully consider differences to ICAO standards, in particular phraseology and terminology, to evaluate whether the safety advantage of the UK difference is outweighed by the potential confusion to affected stakeholders.

2.3. DELEGATION

Delegation is the second of the guiding principles of the CAA’s reform plans.

> *“We wish to maximise delegations to the extent that industry appetite and competence and resilience are the only constraints.”*[33]

Perhaps more than other member states, delegation of some regulatory activity has been and in some cases remains a successful element of UK regulatory policy. The LAA handles a significant part of the amateur built community aircraft certification oversight.

Up until the advent of EASA, sailplane airworthiness, operations and pilot certification in the UK were un-reregulated but overseen by the BGA. In 2004/2005, there was a need to identify how BGA self-regulated sailplanes would transition to Part 21 aircraft certification requirements. The CAA at that time decided that BGA sailplanes could only transition and therefore be permitted to hold a C of A if formal EASA modification action was taken on all changes including repairs and component changes made to those 2000+ sailplanes during their in-service life under BGA control.

The BGA carried out a Cost Benefit Analysis that identified the original CAA decision would result in widespread economic write-offs, and in a paper to the DfT pushing back against the CAA’s requirement noted from BGA accident and incident data that ‘technical causes typically account for approximately 10% of accidents in UK General Aviation. The equivalent figure under BGA self-regulated oversight of airworthiness is less than 9%”. Direct intervention by DfT and EASA achieved a proportionate solution. Although the comparison between the CAA regulated safety performance and the self-regulated equivalent was not the deciding factor in achieving a sensible outcome, the data was crucially helpful.

The CAA now envisages the use of qualified entities (QEs) to deliver regulatory oversight.

[33] CAP1123

> *"Here the CAA would retain overall accountability so that the UK continues to meet its international and European obligations, but responsibility for delivery of the regulation would be delegated to one or more Qualified Entity. A Qualified Entity would deliver regulatory oversight locally and, being closer to the sector than the CAA, do so in a manner more proportionate and efficient for that sector. They could legitimately compete with each other for business, with fees and charges set by market demand.[34]"*

The criteria for QEs are set out in Annex V of the Basic Regulation and are quite demanding. In particular criterion 1 requires that:

> *"The entity, its Director and the staff responsible for carrying out the checks, may not become involved, either directly or as authorised representatives, in the design, manufacture, marketing or maintenance of the products, parts, appliances, constituents or systems or in their operations, service provision or use."[35]*

This may make the use of QEs somewhat impractical, as most organisations with the experience, resources and funding to perform the delegated regulatory function will not meet this criterion. The Panel welcomes the CAA's intention to delegate, but there are issues here that must be considered further. The Panel will look further at issues around delegation in its further work.

Delegation is an important enabler of proportionate regulation - but it brings with it complex issues of liability. In principle competition between providers would drive down costs enabling efficient and cost effective regulation of the sector. However this assumption ignores the fact that many of the current GA associations and organisations are voluntary, and that the sector is comparatively small and specialist. It is not currently clear that delegation would always be commercially viable; that associations would be able to secure the necessary insurance to enable them to take responsibility for the risks that delegation brings or that commercial provision would not undermine the voluntary associations upon which the GA depends. The Panel proposes to consider these issues further with CAA [and the GA associations] during the next phase of its work.

2.4. AIRSPACE EQUITY

The CAA's Directorate of Airspace Policy, whose functions are now part of the Safety and Airspace Regulation Group, has the responsibility of balancing the needs of airspace users. According to the Airspace Charter, one of its key objectives is:

> *"To carry out fair and effective regulation of the airspace system and its supporting infrastructure."[36]*

There are few domains of aviation regulation where the conflicting requirements of stakeholder are as apparent as in airspace regulation. On the one hand, Commercial Air Transport (CAT) operators seek a high target level of safety with respect to collision risk, and are generally prepared to invest in, for example, equipment that facilitates this. By contrast, for sports and recreational aviation users, collision risk represents just a small part of an overall risk that necessarily reflects a lower target level of safety for participants. Its users tend to operate in airspace with a low traffic density, manage their own separation from other airspace users, and tend have little or no interaction with Air Traffic Management (ATM) at all. It is probable that, if UK airspace were used only for General Aviation operations, an appropriate level of safety could be achieved without any ATM provision whatsoever.

[34] CAP1123
[35] Annex V, Basic Regulation
[36] http://www.caa.co.uk/docs/33/CAP724.pdf

Thus the UK CAA has a role in providing equity and fairness in managing the shared resource of UK airspace.

Almost all CAT operations are conducted under instrument flight rules (IFR), which do not assume that the aircraft can visually avoid of terrain/obstacles, or other aircraft. The majority of General Aviation operations are conducted under visual flight rules (VFR) at relatively low level, in minimum meteorological conditions that are designed to allow visual avoidance of both terrain/obstacles and other aircraft. Nevertheless, a significant fraction of GA operations also take place under IFR, and require extra qualifications of the pilot and extra equipment on the aircraft.

2.4.1. AIRSPACE CLASSIFICATION

Since the early 1990s, ICAO has set an airspace classification system that divides airspace into 7 classes, from A to G. The most restrictive for VFR access is class A, in which VFR flight is not permitted. Classes B, C and D airspace permit VFR flight with a clearance from ATC, whilst Class E airspace requires a clearance for IFR flights, but not for VFR. Class F and G airspace are "uncontrolled", and a clearance is required for neither IFR nor VFR.

The bulk of the UK's lower airspace is divided between class A airspace (the airways and terminal manoeuvring areas reserved for IFR), class D airspace around larger airports, and class G airspace which is the remainder. The ICAO classification scheme codifies UK convention for airspace regulation originally set many decades ago, and essentially unchanged in that three-part scheme.

Other EU and ICAO states use strikingly different schemes. Germany's airspace is stratified, for example, using class G up to 2500 ft agl, class E from there to FL100, and class C above. Class C and D are used around larger airports. Class A is not used at all. The use of class E airspace in this way assumes the existence of an ATC infrastructure that can service IFR flights at any location over Germany. An analogous infrastructure does not exist in the UK, and would be relatively expensive to provide for questionable benefit, as set out in the CAA's response to RTC #254.

While individual airspace changes are reviewed for efficacy after a period of operation (see below), the paradigm of A/D/G airspace structure has never undergone a thorough review, taking into account learning from other states with different operational practices.

From the point of view of a GA pilot conducting a VFR flight, class D airspace presents what can be an inconvenience (in that he must interact with ATC to obtain a clearance) and class A presents an impenetrable barrier to freedom of flight. The issue is not merely one of convenience nor freedom as an abstract concept. The flexibility to be able to fly at higher altitudes (than those necessitated by remaining beneath low base levels of controlled airspace) has an impact on fuel consumption, environmental footprint (noise), collision risk and pilot workload (hence safety). RTC comments #237 and #242 emphasise this.

From the point of view of a CAT IFR flight, and for an Air Navigation Service Provider (ANSP) providing separation of that flight from other aircraft, class A and D airspace represent a known environment in which control is exercised over traffic. Class A has the added advantage for the ANSP that it does not have to provide the service capacity to accommodate VFR flights (with which there may be an associated controller workload at busy times). Class G airspace represents an unknown environment, in which ATC can only provide an advisory service to minimise collision risk and even then only in limited geographic areas.

Anomalies can occur in such a polarised system, and occasionally both pilot and ATC would wish for a flight to be cleared on a trajectory through class A airspace, but that trajectory is forbidden because of flight rules, pilot qualification or aircraft equipment. There are other circumstances in which a VFR flight would ideally route though class A airspace that is empty at the levels requested, but is forbidden from even requesting such a clearance from ATC, which may nevertheless have the workload capacity to accommodate it. In either of these circumstances, the airspace classification would appear to be acting as "red tape". However, if the airspace were made class C or D, the provision of ATC capacity to enable either regular or occasional VFR access would come at a cost to the ANSP (which is passed on to the users through en-route charges).

Controlled airspace (classes A to E) is, in essence, serviced by ANSPs at cost to allow CAT users to meet their higher target level of safety. Typically, in considering transport infrastructure, a beneficiary is expected to fund the arrangements made to accommodate non-participants whose freedoms are eroded by the presence of that infrastructure. Thus the public expects footbridges to be built over roads with no cost of access to pedestrians using the bridges, and road users expect to be able use level crossings without paying a toll for their maintenance. It therefore seems reasonable to expect the costs of servicing reasonable access to controlled airspace to be borne by the majority users of that airspace.

Recommendation 29: The CAA should review the classification of lower airways and some Terminal Manoeuvring Areas (TMAs) as class A airspace, with a view to the use of class C or class D airspace in its place.

Recommendation 30: the Government should require, as a matter of public policy, that reasonable access under Visual Flight Rules to controlled airspace is provided by Air Navigation Service Providers offering Air Traffic Control within that airspace, to users who are not the intended beneficiary of the airspace, at the cost of the intended beneficiaries of the airspace classification and at no cost to other users.

2.4.2. AIRSPACE AROUND AIRPORTS

The CAA has a mature system for making changes to the airspace allocation within the UK. It requires the sponsor of a proposed change to develop detailed proposals and consult on them, with a requirement for appropriate justification of any decisions made based on the consultation, particularly if recommendations by those consulted have been rejected.

Controversial airspace change proposals typically concern the establishment of class D controlled airspace at airports that have previously operated in class G, often in response to increased (or planned increases of) CAT activity. Industry representatives have commented to the Panel that changes in airspace policy and designation of new control areas (CTA) and other class D airspace are not consistent with the level of activity or potential risk. Examples given include airspace around Doncaster-Sheffield, Norwich and proposals for changes to airspace around Southend.

Balancing the needs of the safety of CAT operations with the freedoms of other airspace users is not an easy task, and requires careful consideration of each case on its own merits. The Panel is of the view that the airspace change process is a generally rigorous consultative process.

Nevertheless, there is a concern among GA pilots that:

1. assumptions about traffic volumes that are used to justify the establishment of controlled airspace tend to be exaggerated, but it appears that the CAA does not take action when such volumes are not realised in practice; and
2. the access to VFR traffic promised by ANSPs to mitigate the effects of controlled airspace tends to be unavailable in practice, in part because the ANSP takes an overly conservative approach to separation, and in part because it fails to staff ATC sufficiently to service that access.

Without a detailed investigation, it is difficult to assess whether these concerns are justified. The CAA does have a post-implementation review process to deal with concern 1, and also a Release of Controlled and Segregated Airspace policy, though the latter requires a sponsor as for the establishment of controlled airspace.

Changes in airspace should also reflect the vastly improved take-off and climb performance of modern commercial transport aircraft and the opportunity for continuous climb and descent operations. Recent experience in the UK does not appear to have adopted that approach e.g. Doncaster-Sheffield and Norwich, and additional controlled airspace proposals for Southend.

Airspace tends to be designed to meet the theoretical needs of procedures that are rarely used in practice. There are associated regulatory requirements, for example that SIDs and STARs are contained within controlled airspace, even if on 99% of practical occasions aircraft are tactically vectored off the procedural routes. But there is also a concern that those applying for controlled airspace have little incentive to minimise the volume of airspace they wish to control/manage.

With shared resources, of which airspace is a good example, a well-established mechanism for apportionment is a charging mechanism, as is used for example for radio spectrum. Such a scheme might well be appropriate for those who wish to prioritise use of an airspace volume according to commercial needs, as is the case with most controlled airspace. Rental of airspace would tend to incentivise ANSPs to return airspace to an uncontrolled status when it is no longer justified by commercial demand. Article 15(3)(f) of Regulation (EC) no. 550/2004 of 10 March 2004[37] on the provision of air navigation services in the single European sky appears to envisage such incentives.

Recommendation 31: the CAA should review airspace design guidelines to ensure that controlled airspace reflects practical operational requirements, not theoretical requirements.

Recommendation 32: the Government should implement, as a matter of public policy, an ongoing charge per unit volume to Air Navigation Service Providers who service controlled airspace, to incentivise efficient use of airspace as a shared resource.

Recommendation 33: designation of controlled airspace should be reviewed on a regular basis to confirm whether it is still justified against the original specification.

2.4.3. FUTURE AIRSPACE STRATEGY

In its response, the CAA emphasises the Future Airspace Strategy (FAS).

> *"On reviewing airspace, the CAA's Future Airspace Strategy (FAS) is about a fundamental redesign of the UK's airspace. It is not focused solely on Commercial Air Transport (CAT)*

[37] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:096:0010:0019:EN:PDF

> *operations. There is a dedicated FAS General Aviation Sub-Group facilitated by the CAA. The FAS envisages that future airspace designs will take full advantage of the better aircraft performance and technology available today. The CAA expects, wherever possible, that maximum use of Continuous Climb Operations and Continuous Descent Operations will be made. This should free up some of the lower levels of Controlled Airspace allowing base levels to be simplified and in places released back to Class G."*[38]

The FAS is a bold and ambitious initiative by the CAA that has to be seen in the context of the EU's Single European Sky initiative and particularly its SESAR programme. While FAS has some characteristics that are distinct from SESAR, the key technical and procedural enablers are common, and address key problems with the current ATM system. The European ATS network, on which airlines operate, is fragmented, expensive, inefficient, and reaching full capacity. SESAR is a multi-billion-pound attempt to address these issues, by optimising ATM systems to take advantage of emerging technologies.

There is an important distinction to be made about the relevance of this to GA. The majority of GA does not operate on the ATS network and does not use its services to a meaningful extent. Thus it is neither significantly affected by the capacity and efficiency issues, nor will it directly benefit from their resolution. Thus it must look for indirect benefits, like the release of lower level controlled airspace mentioned above.

There are also technological aspects of the FAS that may bring benefits to GA, for example:

- the introduction of GNSS-based instrument approach operations at smaller (currently VFR-only) airports;
- a general, flexible use of airspace that enables airspace to be controlled or restricted for the minimum necessary period rather than permanently established; and
- System Wide Information Management that should improve the availability of information (weather and aeronautical information) in the cockpit in real time.

With the encouragement of the CAA, NATS has led the FAS Industry Implementation Group, which has created a FAS Deployment Plan to take advantage of some of the shorter term improvements on the ATS network. This has had minimal impact, positive or negative, on GA. Phase 1 of the related London Airspace Management Programme, which is in a consultation phase, has not proposed the release of any low level controlled airspace (and has proposed establishing more of it at medium levels), though this initial phase is quite limited in its scope.

It is therefore important that the FAS sub-group on General Aviation, mentioned in the CAA's RTC response (CAP1123), and recently formed as the 'FAS VFR Implementation Group', manages to deliver significant improvements for GA, even if these benefits are not as revolutionary as those demanded by CAT.

Recommendation 34: the CAA should facilitate the work of the FAS VFR Implementation Group to deliver significant improvements for GA.

2.4.4. EQUIPMENT REQUIREMENTS

As well as determining airspace classification, the CAA also has a role in determining the airborne equipment requirements in each class of airspace. This equipment includes instrumentation for flight

[38] CAP 1123

path management (attitude indicators, altimeters etc.) as well as avionics for communication, navigation and surveillance (CNS). Equipment carriage has an impact primarily on the safety of the aircraft carrying it, but also implications for the safety of other airspace users.

In the section on innovation, the Panel has already commented on the requirement for the carriage of certain navigation equipment. Conventional wisdom for conventional navigation has led to regulation that is quite prescriptive regarding navigation equipment to be carried. Such requirements are dated, costly, and inefficient. EASA's part-NCO takes a more pragmatic approach:

> *"(a) Aeroplanes operated over routes that cannot be navigated by reference to visual landmarks shall be equipped with any navigation equipment necessary to enable them to proceed in accordance with:*
>
> *(1) the ATS flight plan; if applicable; and*
>
> *(2) the applicable airspace requirements.*
>
> *(b) Aeroplanes shall have sufficient navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment shall allow safe navigation in accordance with (a), or an appropriate contingency action, to be completed safely.*
>
> *(c) Aeroplanes operated on flights in which it is intended to land in IMC shall be equipped with suitable equipment capable of providing guidance to a point from which a visual landing can be performed. This equipment shall be capable of providing such guidance for each aerodrome at which it is intended to land in IMC and for any designated alternate aerodromes."*[39]

This ensures that aircraft are not required to carry equipment that is not used in practice.

Recommendation 35: the CAA should align national navigation equipment carriage requirements (Schedule 5 of the ANO) for General Aviation operators with those in EASA's Part-NCO as soon as possible, limiting any "airspace requirements" to requirements for compliance with Performance Based Navigation specifications.

2.4.5. AVIONICS TECHNOLOGY DEVELOPMENT

Airborne surveillance equipment (SSR transponders and, in the future, ADS-B transceivers) also has the potential to improve safety by aiding electronic conspicuity, and therefore providing situational awareness in the form of advanced warnings of conflicting traffic and, as a last resort, a safety net for collision avoidance. ICAO has recommended that all aeroplanes and helicopters be equipped with altitude-encoding transponders for at least the last decade, though few if any states adopt this as a mandate. As a half-way house, the CAA has implemented a system of Transponder Mandatory Zones (TMZs) where electronic conspicuity can act as a safety mitigation to avoid the need for controlled airspace to be established.

The cost-benefit associated with such equipment varies widely between different airspace users. CAT operators are typically already equipped with both SSR transponders and the means (ACAS II also referred to as "TCAS") for detecting other appropriately equipped airspace users. By contrast, cost, power and weight considerations mean that few light sports and recreational users (e.g. gliders,

[39] *NCO.IDE.A.195 Navigation equipment*

microlights) are so equipped. And without a detection means, electronic conspicuity in the form of a transponder offers no direct benefit to the user equipped with it.

The possibility of an electronic conspicuity mandate in class G airspace is therefore an emotive issue among GA users, and RTC #244 describes TMZs as "not helpful". Nevertheless, if the GA community opposes the TMZ as a compromise solution, it may end up with more controlled airspace than would be necessary with TMZs.

An interesting development is the emergence of "FLARM", a proprietary standard developed primarily for the improvement of collision avoidance in gliders. The key lesson from its success, even though FLARM itself is not interoperable with other surveillance equipment, is that many pilots are prepared to pay for traffic awareness systems that both make their own aircraft electronically conspicuous *and* allow them to detect other aircraft.

A number of groups (for example the Electronic Conspicuity Working Group and the NATMAC FAS-subgroup) have considered the benefits of electronic conspicuity. Separately, NATS has a project to develop a low-power ADS-B transceiver, which, like FLARM, also provides traffic information to the equipped aircraft, though this will not incorporate Mode S transponder functionality. And SESAR JU understands the imperative for low-cost, low-power electronic conspicuity equipment to facilitate GA's participation in its vision of future ATM.

Recommendation 36: the CAA should continue to support work on electronic conspicuity in collaboration with a broad range of stakeholders.

Recommendation 37: adoption of electronic conspicuity technology should be encouraged by the delivery of benefit to users who choose to equip with it and not mandated by regulation.

The European interoperability standards for ADS-B will use the same frequency and downlink format of response as is used for mode S transponders. So, the CAA is looking at ADS-B as an add-on to a transponder. The CAA sees its role as helping to reduce the cost to industry of bringing the device to market by helping with the research and development and then seeking to facilitate a large enough market so that the unit cost comes down.

The project was submitted in 2013 and the DfT has allocated £300,000 from the UK State Safety Programme to carry it out. The project has four elements:

(i) To develop a full transmit and receive device with proof of concept flight trials and analysis;
(ii) To research the use of uncertified GPS devices with a view to enable the CAA to set a minimum standard for developers;
(iii) To research the use of uncertified GPS devices with a view to develop an application for an existing mobile device; and
(iv) To research potential interference issues with electronic conspicuity devices and ensure that additional equipment in the cockpit is safe.

The Panel notes that this is an important project for GA, and that further funding may be needed to assist in achieving the objectives of the project and/or to take the project further.

The availability of a low-cost low-power conspicuity solution provides potential benefits for GA and safety nets for CAT. The key will be to strike an appropriate balance between system performance/capability (e.g. precision, range, functionality) and its cost and power consumption, and to enable it to be installed on the broadest range of aircraft.

Recommendation 38: the CAA should ensure that:

- ***the ADS-B project is managed by the CAA's GA Unit;***
- ***a project plan and progress report on it is submitted in time for consideration by the Panel ahead of its final report;***
- ***the necessary work is taken forward as a matter of some urgency with a completion date of April 2015;***
- ***the GA Unit should also seek other possible funding options both to help the project and also to take forward its outcome after April 2015; and***
- ***the GA Unit should draw up a longer-term project plan to deliver the desired outcome as soon as practicable and taking into account any manufacturing and financial constraints.***

2.5. EU RELATIONSHIP

For at least the last 20 years, the EU has attempted to create a single European aviation market by removing barriers to free movement. On 16 December 1991, Council Regulation (EEC) No 3922/91[40] "on the harmonization of technical requirements and administrative procedures in the field of civil aviation" and Council Directive 91/670/EEC[41] "on mutual acceptance of personnel licences for the exercise of functions in civil aviation" attempted to set common standards and mutual acceptance of those standards, which were to be developed by the Joint Aviation Authorities. This organisation of National Aviation Authorities worked to create standards on a consensus basis. Licences and certificates meeting the joint standards would be mutually recognised, but there was no requirement to apply those standards nationally.

From a technical point of view, a lot of good work was done by the JAA. Politically, it failed to achieve the desired goal: states insisted on maintaining their own regulatory requirements and the standards tended to develop to be a combination of the most demanding across the EU. It delivered a high standard for the safety of CAT (the results of which are evident today), but did not achieve a highly efficient system over a level playing field of a single European aviation market. As a result the Commission decided that more direct measures were required, and set up the European Aviation Safety Agency to create and apply a mandatory set of standards across the EU for all aircraft that do not satisfy a set of criteria (known as "Annex II") for remaining under national regulation. Annex II aircraft include microlights, historic aircraft and amateur-built aircraft.

The EU has progressively taken more of aviation safety into EU competence. Regulation (EC) No 1592/2002[42] brought Airworthiness (Initial and Continuing) into EU competence and set up EASA. The first extension Regulation (EC) No 216/2008[43] brought Flight Crew Licensing and Air Operations into EU competence. The second extension (by amending regulation (EC) No 1108/2009) did the same for Air Traffic Management and Aerodromes.

2.5.1. CAA INVOLVEMENT IN EU REGULATION DEVELOPMENT

One common complaint is that the UK does not play a sufficient role in the EU rulemaking process to ensure that rules are suitable for UK stakeholders. Of all the myths exposed in the responses to the

[40] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1991:373:0004:0008:EN:PDF
[41] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1991:373:0021:0025:EN:PDF
[42] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:240:0001:0021:EN:PDF
[43] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2008R0216:20091214:EN:PDF

RTC, this is one of the most significant misconceptions. The Panel recognise that, to their credit, both the CAA and the DfT play a significant role in the crafting of EU aviation regulation, through the EASA Regulatory and Thematic Advisory Groups, rulemaking groups, and in the EASA Committee. It has, arguably, the strongest influence of any of the member states over the shape of regulation. Moreover, their engagement and consultation with GA stakeholders is almost unparalleled across the EU.

The UK has for example:

- steered consensus on a number of important FCL implementation issues in the FCL Partnership Group and SSCC-TAG;
- refused to accept EASA's unworkable opinion on Specialised Operations at EASA Committee;
- during the development of the Standardised European Rules of the Air (SERA), insisted on a number of exemptions and permissions that can be applied on a national basis and are critical to GA users in the UK;
- championed some important alleviations in medical standards in Part-MED;
- held out for some important modifications to the rules for non-commercial operations; and
- negotiated (with the Commission) an amendment to the aircrew regulation to allow the UK to continue to issue ratings substantially equivalent to the UK IMC rating, with the significant contribution to flight safety that it brings.

The nature of the EU harmonisation process is that compromises must be made, and this sometimes means that EU regulation is different from what is familiar to UK stakeholders. It is very rare that this is "for want of trying" by the CAA.

Despite the rules being set at a European level to a common standard, implementation is carried out by NAAs. The implementation arrangement varies between areas of regulation. In initial airworthiness, for example, aircraft type certificates are within EASA's remit, as is the approval of Design Organisations, but Production Organisations are approved by NAAs, who also issue the certificates of airworthiness of individual aircraft. In flight crew licensing, NAAs issue licences and also approve training organisations within their territory, while EASA fulfils this role for ATOs located outside the EU. A guide to the complex division of responsibility between EASA and NAAs can be found in Annex 4 of the 2013 Art 62 review of the EASA system.

So even though the texts of the regulations are created through the EASA system, they are interpreted and applied by NAAs. EASA has a Standardisation Directorate whose role is to oversee this, but it appears to work reactively on the basis of inspections rather than proactively to assist the transition. A further challenge is added by the poor availability of quality explanatory material to explain the intention of regulation. Much of the regulatory text was transposed from JAA texts, which did not have the same mandatory force, and thus loopholes and inconsistencies emerge only when they become binding EU regulation.

It is the complexity of this dual-responsibility system that is at the heart of much stakeholder dissatisfaction with EU regulation. The issue of interpretation leads to frustration for stakeholders: on the one hand national rules are superseded in the name of harmonisation: on the other, the interpretation and application of the rules appears to vary between member states, undermining the principle of harmonisation.

This also leads to a situation in which an NAA and EASA blame each other for an overly restrictive rule, with the NAA claiming that the rule itself is unduly restrictive, and EASA claiming that the NAA's interpretation of it is unreasonable. Often, only very detailed subject matter expertise can resolve

the question of who is "to blame" for such a difference, but it is not acceptable for bad regulation to hide in the crack of responsibility between EASA and the NAAs. This is exactly the type of organisational error that is intended to be prevented by the EU's insistence on organisational requirements for training organisations, maintenance organisations, operators etc. It is the Panel's view that whilst the CAA often engages successfully in the rule-making process, it must also continue this good work with EASA and the European Commission to clarify, refine and, in some cases, significantly amend European rules that are already law. Any impression that there is "nothing the CAA can do" about existing regulation from the EU would be misleading.

Recommendation 39: ***the CAA should be mindful of the interface between EU regulation and its UK implementation. Where EU regulation does not appear to offer an acceptable regulatory solution through any reasonable interpretation, it should engage with EASA and the European Commission to resolve issues at their source.*** **In doing so, in the interest of harmonisation, it should, wherever possible, work to achieve better regulation at the EU level, rather than seeking national exemptions or applying additional measures applicable only for the UK or to UK stakeholders.**

Recommendation 40: ***when stakeholders challenge regulation as unreasonable, the CAA should either take responsibility for the safety basis of the regulation or identify the steps it is taking with EASA and the European Commission to improve the regulation in question.***

Gold-plating

The public perception of UK regulators taking EU regulation and implementing it in a more onerous way than other EU member states is almost legendary. This tendency has been recognised by the CAA and it has made a commitment to avoid this 'gold plating'.

> *"Since the Government launched its GA Red Tape Challenge we have, for example, publicly committed to identify and eliminate regulatory 'gold-plating', which some RTC respondents said the CAA habitually did"*[44]

There is little doubt that those who implement gold-plate do so in good faith and with the intention of improving or maintaining safety. However, the ultimate effect may not achieve this goal.

Gold-plating can be at the level of regulation itself, e.g. the preservation of national law in addition to EU regulation. This usually stems from a desire to make minimal changes to (typically more restrictive) familiar national law in implementing EU rules, because the status quo has resulted in an acceptable system, and the EU rule set represents an unknown.

One apparent example is the UK implementation of the Standardised European Rules of the Air (SERA). Despite the rules of the air being brought into EU competence as COMMISSION IMPLEMENTING REGULATION (EU) No 923/2012 of 26 September 2012 (SERA)[45], the CAA has proposed some 36 UK rules that are to be retained in addition to the EU rules. Some are either addressing national variations permitted by SERA, many of which were negotiated by the UK for the benefit of UK stakeholders during the development of the rule, such as a general permission associated with minimum levels of flight, or cover issues clearly currently outside of the scope of SERA. These are reasonable and uncontroversial. But others apply extra restrictions, and are, at least at on the face of it, gold-plating. The proposed rule on flight over congested areas is an example. SERA.3105 contains the following requirement:

[44] CAP1123

[45] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:281:0001:0066:EN:PDF

> *"Except when necessary for take-off or landing, or except by permission from the competent authority, aircraft shall not be flown over the congested areas of cities, towns or settlements or over an open-air assembly of persons, unless at such a height as will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface."*[46]

Yet the CAA's proposal retains the "land clear" rule to apply in addition:

> *"An aircraft flying over a congested area of a city, town or settlement shall not fly below such height as would permit the aircraft to land clear of the congested area in the event of a power unit failure"*[47]

This is more restrictive in two ways: it is not sufficient for the aircraft to be able to land safely, but it must additionally be able land clear of the congested area. There is also no exemption for taking off and landing (not even apparently at a licensed aerodrome as in existing regulation, and as is proposed as an exemption from SERA.3105, though this may be an unintentional omission).

This undoubtedly raises the level of safety in respect of flight over congested areas above the level provided by SERA to maintain that of the current UK regulation. To apply an extra rule in the UK on the same subject matter covered by SERA to achieve a higher standard in the UK is exactly what is meant by "gold-plating".

However, what that level of safety is, in quantitative terms, difficult to determine. Both the European Commission and ICAO (on whose standard in Annex 2 the rule is based) clearly believe that the level of safety provided by SERA.3105 alone provides sufficient protection for third parties, and indeed there is, to the best of the Panel's knowledge, no evidence to suggest that this lower level of safety causes an unacceptable level of third-party harm in other states. And to have an extra rule of this sort increases the complexity for stakeholders; imagine the effect of an extra and different rule in each EU member state

There is however a significant complication in the case of SERA. In its cover regulation, SERA includes:

> *"Article 8 Transitional and additional measures*
>
> *1. Member States that have adopted prior to the entry into force of this Regulation additional provisions complementing an ICAO Standard shall ensure that those are compliant with this Regulation.*
>
> *2. For the purpose of this Article, such additional provisions complementing an ICAO Standard shall not constitute a difference under the Chicago Convention…*
>
> *Article 9 Safety Requirements*
>
> *Further to the entry into force of this Regulation and without prejudice to [future amendments to SERA], Member States shall, **in order to maintain or enhance existing safety levels**, ensure that, within the context of a safety management process addressing all aspects of the implementation of this Regulation, a safety assessment on the implementation plan, including hazard identification, risk assessment and mitigation, is conducted, preceding the actual*

[46] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:281:0001:0066:EN:PDF
[47] http://www.caa.co.uk/docs/2628/20130625SERAConsultationDocumentDraftAnnexERulesOfTheAirRegulations20141.pdf

> *changes to the previously applied procedures. Such mitigation may include the application of [the flexibility provisions]"*[48]

The CAA has interpreted these Articles as requiring a rule-by-rule analysis of the SERA rules against existing UK rules and moreover that they are **mandated** by Article 9 to retain any individual national rule that offers a higher level of safety than the SERA equivalent. It is hard to believe that this interpretation is the intention of the Commission, as it fundamentally undermines the objective of harmonising the rules of the air across the Community. It is also inconsistent with the principles of total system safety set out in section 3.2.1, which would require the rules to be considered as elements of a complete rule set. Nevertheless, having decided on this interpretation of the cover regulation, it is understandable that the CAA has proposed gold plating.

Recommendation 41: the CAA should seek clarity from the European Commission on the intention and interpretation of Article 9 of the SERA regulation, and, if necessary, withdraw proposed national rules that are more restrictive than SERA equivalents but cover substantially the same subject matter.

More typical is gold-plating at the level of interpretation of technical rules. The rationale behind such gold-plating is complex and variable, and it is almost always well intentioned. It can include:

- ambiguity in the EU regulation, that requires a more restrictive interpretation in order to achieve its (perceived) objectives;
- a belief that the most liberal interpretation of the EU rules represent a genuine safety hazard;
- a reluctance to develop or accept alternative means of compliance with implementing rules; and
- a need to establish a consistent interpretation for different stakeholders, leading to unwillingness to accept the most liberal interpretation.

This may be the case, for example, with some of the examples the CAA quotes in CAP 1123.

> *"One respondent suggested that the CAA has determined that examiner courses need to be longer than that required by EU law and this is gold-plating. It is helpful to receive specific examples such as this and the CAA will investigate this by the end of November as part of its commitment to eliminate gold-plating. Any changes will be made by the end of the year."*[49]

There may also be an issue of the level of assurance required of an organisation that particular requirements are met. For example:

> *"The CAA has noted the perception that it has gold-plated the EASA requirements in many areas, for example the requirement for Approved Training Organisations to integrate Safety Management Systems into their organisation. The CAA is committed to taking a proportionate approach in this area. It has already published SMS guidance for small, non-complex organisations on its website. The CAA is considering what further assistance it can give on this issue and tackling any perceptions of excessive regulation coming from EASA."*[50]

EU law does require any ATO to demonstrate compliance with implementing rules in order to receive approval.

[48] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:281:0001:0066:EN:PDF
[49] CAP1123
[50] CAP1123

> *"In order to demonstrate that the Implementing Rules are met, a risk assessment should be completed and documented. The result of this risk assessment should demonstrate that an equivalent level of safety to that established by the Acceptable Means of Compliance (AMC) adopted by the Agency is reached."*[51]

But there is significant flexibility available in the way that this is demonstrated, and this should be exploited to the full.

One issue (RTC#197, 221) illustrates some of the subtlety of the gold-plating dilemma. With the introduction of the JAR-FCL regime more than a decade ago, a requirement was introduced for pilot currency. It has been transposed into EASA Part-FCL[52] with substantially the same wording:

> *"(b) Aeroplanes, helicopters, powered-lift, airships and sailplanes. A pilot shall not operate an aircraft in commercial air transport or carrying passengers:*
>
> > *(1) as PIC or co-pilot unless he/she has carried out, in the preceding 90 days, at least 3 take-offs, approaches and landings in an aircraft of the same type or class or an FFS representing that type or class"*[53]

At first sight, it seems consistent with the risk hierarchy and informed consent principle that a pilot must meet a more stringent requirement if exposing passengers to risk than if flying solo.

But the term *passenger* is not defined in the legislation. The CAA has taken a broad interpretation of the term – broader than is customary in some other EU states – and decided that any occupant of a single-pilot aircraft other than the pilot-in command or an instructor giving instruction to that pilot should be treated as a *passenger*. This has some perverse consequences.

Consider the case of two pilots who share ownership of an aircraft, one of whom is out of 90-day currency. He can fly the aircraft solo, but cannot be accompanied by the co-owner who is, himself, perfectly entitled to be pilot-in-command of the aircraft, and can assess and (to an extent) control the risk to which he is exposed. And, while for simple aircraft it may be easy to find an instructor who is qualified to provide a service to allow the pilot to regain currency, few will be qualified on more sophisticated types.

So the pilot will usually choose to fly the aircraft solo, as he is entitled to do for 3 quick circuits to meet the currency requirement without the benefit of the second pair of eyes, which are familiar with the aircraft. The co-owner would not need the full skill set of an instructor in order to be a positive safety benefit, but is forbidden from playing that role.

Recommendation 42: the CAA should revise its interpretation of the term 'passenger' for the purposes of Part-FCL to avoid adverse consequences, and should offer guidance accordingly.

Gold plating may superficially appear to raise standards in the UK in particular ways. However the nature of the EU aviation market means that if the UK applies standards that create more cost and administrative burden than other NAAs, UK industry will be disadvantaged and other states' industry will gain a competitive advantage and market, with the result that less and less activity will take place under those higher standards. The UK should accept that appropriate levels of safety are achieved with the baseline regulation in EU law, and it is not in the long term interests of safety for UK stakeholders to create an unduly burdensome environment in the UK.

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[51] *AMC1 ORA.GEN.120(a) Means of compliance*

[52] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:311:0001:0193:EN:PDF

[53] FCL.060

Recommendation 43: ***the CAA should continue its efforts to eliminate 'gold-plating', and should ensure that those responsible for drafting policy and implementing rules understand the principles behind this initiative.***

2.5.2. FURTHER EU ENGAGEMENT ON THE REGULATION OF GA

EU SAFETY STRATEGY

In the haste to harmonise aviation standards in the EU, compromises have been made that result in very poor EU regulation for GA. EASA and the Commission have recognised this, and have created the European GA Safety Strategy and Roadmap for Regulation of GA to address existing issues and to improve rulemaking in the future. Many of the principles set out in the CAA's RTC response are consistent with the principles of the Safety Strategy and Roadmap (for example 'informed consent' and the 'risk hierarchy' in the Safety Strategy), and the CAA has an important part to play in this, as the CAA's RTC response recognises:

> *"It will also press the European Aviation Safety Agency (EASA) Management Board to make progress on the report prepared in August 2012 by a Working Group on how the regulatory approach to GA safety at the European level could be improved."*[54]

Recommendation 44: ***the UK government and CAA should continue actively to support the European GA Safety Strategy and Roadmap for Regulation of GA.***

Recommendation 45: ***the CAA should:***

- ***support the initiatives of the GA sub-committee of EASA's Safety Standards Consultative Committee and endorse its document on issues in current regulation adversely affecting GA;***
- ***engage strongly (for example via a working group of national aviation authorities) in EASA's work to find solutions to improve EU regulation of GA; and***
- ***ensure consistency of this work with UK national regulatory policy***

The Panel urges the CAA to press EASA and the Commission on two particular issues: pilot medicals and maintenance of aircraft.

PILOT MEDICALS

The requirement for pilot medicals received significant attention in the RTC (e.g. 199, 204, 216). The CAA responds:

> *"The CAA argued strongly and successfully in favour of a GP-based, rather than AME-based, medical for the EASA Light Aircraft Pilot Licence. 8 The CAA cited its own positive experience using such an approach with the UK national Private Pilot's Licence. The CAA has issued clear guidance for GPs and AMEs stating which doctors may undertake which assessments.*
>
> *GPs may undertake assessments for the Light Aircraft Pilot Licence when an applicant has no major medical history and AMEs should undertake assessments when aviation medical knowledge is required to make the assessment of fitness. This is a proportionate, risk-based*

[54] CAP1123

> *approach and a significant benefit to the UK aviation industry, which the CAA campaigned alongside industry to achieve. The concept of the GP is not fully understood in the rest of Europe and there was a significant push back from other Member States to allow only AME certification. The CAA is not responsible for setting fees for the medical assessments and the fees charged by AMEs and GPs may vary."*[55]

This misses the point. RTC comments draw comparisons with the NPPL, which uses a medical *declaration*, verified by a GP against medical history, rather than an assessment. If a GP performs an *assessment*, the cost of the assessment is likely to be the same as if the assessment were performed by an AME, as the GP is now also taking responsibility for the pilot's meeting the requirements, not simply confirming that the applicant's history is consistent with their medical declaration. Thus there is little practical benefit in permitting GPs (most of who will be unfamiliar with the process and will take longer than an AME to deal with the administrative aspects) to perform medical assessments. For specific medical conditions and history, an AME is still required to perform the examination for the issue of a LAPL medical certificate.

The value of medical assessments is tenuous at best. In Europe the aero-medical problem is no longer undetected disease that may create a hazard, but those few pilots who fail to admit to serious but undetectable (by ordinary measures) disease or disqualifying therapy. Both the glider community and NPPL community have operated for many years on the basis of medical declaration without any evidence of significant difference in accident/incident rate with aeromedical causes. In the USA, a bill has been introduced to Congress to propose that pilots who fly recreationally need hold only a standard valid driver's license in lieu of a third-class medical certificate, for VFR flight in aircraft with 6 or fewer seats.

Recommendation 46: the CAA should, once again, pursue the case with the Commission and EASA for a medical declaration to be used instead of a medical assessment for GA pilots, with limitations consistent with the principles of risk-based safety and informed consent, using the evidence base it has from UK NPPL and glider operations.

MAINTENANCE

Maintenance has also received significant attention in the public response to the Red Tape Challenge. The EASA Part-M system results in significant overheads that are disproportionately felt at the lighter end of aviation. Some commented that CAA / EASA appeared to apply the same approach to maintenance of a Cessna 152 as to a Boeing 777, which is wholly inappropriate and disproportionate given the different roles performed and difference in complexity between the aircraft. EASA has recognised the need for proportionate regulation and set up a Part-M GA taskforce, which is making some progress on addressing the problem.

Recommendation 47: the CAA should continue to engage with the work of the Part-M GA taskforce, and work for a reduction in the administrative burden for GA maintenance.

The CAA makes specific comments in CAP 1123:

> *"In relation to the questions relating to pilots/owners not being allowed to carry out maintenance on their own aircraft, this is a misunderstanding. Current regulations allow for pilot/owner maintenance of defined tasks. Private owners can also carry out more extensive*

[55] CAP1123

work on their aircraft under the supervision of a licensed engineer. The CAA will look at the guidance on pilot/owner maintenance to see where it can be made clearer."[56] *[p16]*

While this is true, M.A.803 Pilot-owner authorisation sets out conditions as follows:

"(a) To qualify as a Pilot-owner, the person must:

1. hold a valid pilot licence (or equivalent) issued or validated by a Member State for the aircraft type or class rating; and

2. own the aircraft, either as sole or joint owner; that owner must be:

(i) one of the natural persons on the registration form; or

(ii) a member of a non-profit recreational legal entity, where the legal entity is specified on the registration document as owner or operator, and that member is directly involved in the decision making process of the legal entity and designated by that legal entity to carry out Pilot-owner maintenance."[57]

Unfortunately many jointly-owned private aircraft in the UK are operated through limited companies which are not "non-profit recreational legal entities". This significantly restricts the scope of pilot-owner maintenance.

2.5.3. COORDINATION WITH AND LEARNING FROM OTHER NAAS

All EU member states have competent authorities that implement and oversee flight crew licensing and operations. For the most part, these different NAAs will be implementing the same set of rules in a broadly similar way.

RTC #52 suggests using "standard EASA forms". While it is a misconception that such forms exist for most purposes, each state will have similar needs (albeit with different languages in use), and will need to develop broadly similar systems. There should therefore be an economy of scale associated with collaboration and joint development of such systems by a number of states using a partnership approach. This is of course not trivial, as there are different IT systems and different legal frameworks at play in different states. While it may be tempting to develop systems (for example for online forms) first and then license them to other states, early dialogue would be essential to ensure that the systems do really meet the needs of states other than the UK.

Recommendation 48: the CAA should engage with other NAAs to examine the potential of joint development of systems and procedures to support implementation of EU regulation.

There is also a need to coordinate oversight of activities with other member states, in both FCL and operations. For example, M.A.803 Pilot-owner authorisation reads:

"(d) Without prejudice to the competences of the Member States and to their obligations as set out in ARO.RAMP, the scope of the oversight of activities performed in the territory of a Member State by persons or organisations established or residing in another Member State shall be determined on the basis of the safety priorities, as well as of past oversight activities.

[56] CAP1123
[57] M.A.803 Pilot-owner authorisation

> *(e) Where the activity of a person or organisation involves more than one Member State or the Agency, the competent authority responsible for the oversight under (a) may agree to have oversight tasks performed by the competent authority(ies) of the Member State(s) where the activity takes place or by the Agency. Any person or organisation subject to such agreement shall be informed of its existence and of its scope."*[58]

Day-to-day operations, even for GA, frequently cross borders, and the UK training environment does not always prepare pilots for the diversity of practices and procedures that they will encounter in those operations. It is important, for example, that ATOs in the south of the UK are able to use facilities in neighbouring states and that the FIR boundary does not become a barrier to pilot education.

Recommendation 49: the CAA should engage with other NAAs (particularly those of neighbouring member states) to ensure that cross-border training and aerial work is facilitated appropriately.

Once EU regulations are adopted they become directly applicable in every Member State and it is incumbent on the CAA and other NAAs to apply them. The UK did not apply the full derogation for Part-FCL and implemented it in advance of the majority of other EU member states. Only Switzerland implemented it earlier. This early adoption had advantages (leadership and the ability to influence the processes and standards used across Europe) and disadvantages (encountering and dealing with transitional issues in isolation). Similar timing choices will exist for EU regulation in other aviation domains (for example, operations, air traffic management, and aerodromes).

Recommendation 50: the CAA should review the lessons from the early adoption of Part-FCL to inform any future decisions on derogations.

2.5.4. DUAL SYSTEM

The EU decision to exclude aircraft listed in Annex II from the scope of the Basic Regulation means that some aircraft are operating under EU regulation and others under national regulation. This can lead to divergence of requirements, and inconsistencies at the boundaries between the regimes, as reflected in part in the following CAA comment on the public response to the Red Tape Challenge.

> *"A popular suggestion was for there to be some mechanism for voluntarily orphaning aircraft from a Certificate of Airworthiness to a Permit to Fly. This reflected a common concern that there was an increasingly large gap or hollowing-out between the two regimes."*[59]

While both Certificates of Airworthiness and Permits to Fly exist in both EASA and UK systems, a majority of EASA-regulated aircraft operate on C of As, while most Annex II aircraft do not. A divergence between requirements makes any subsequent change of regime more burdensome, and the dual system is fundamentally more complex.

Some of this complexity offers freedom and flexibility to those still under national law. But much of it simply causes confusion. The UK classifications of public transport, aerial work and private operations (though they created a good self-consistent system) now simply lead to confusion in an EASA world that recognises commercial air transport and commercial operations.

[58] *ARA.GEN.300 Oversight*

[59] CAP1123

The UK has carefully considered some aspects of this dual system. For example, the provisions of the Air Navigation Order for FCL permit EASA Part-FCL licences to be used to their full capability on Annex II aircraft, and the CAA has mostly eliminated the need to hold dual licences (with limited exceptions required for e.g. Annex II helicopter type ratings). There is, however, considerably greater scope to ensure that the systems remain compatible, and this involves a delicate balance between applying EU regulatory principles where they are not mandatory (which could be construed as gold-plating) and maintaining flexibility under national law.

Recommendation 51: the CAA should review the consequences of the duality of EU and national regulation in all domains and take a strategic approach that balances the advantages of standardisation with the need to retain flexibility.

3. SECURING THE NETWORK OF AERODROMES

There is a need to secure the network of UK GA aerodromes, not just for the benefit of GA, but also for the good of the UK as a whole. GA aerodromes ensure that UK regional connectivity can be maintained for those regions, towns and cities outside the main commercial air service network, and can provide valuable facilities for Air Ambulance and Police Helicopter units at times of emergency. Work to grow pilot training in the UK (discussed elsewhere in this report) must also be considered alongside to the availability and preservation of access to unlicensed aerodromes that may be best placed to offer training facilities. The National Planning Policy Framework does ask local planning authorities to take account of the growth of aerodromes and their role in serving business, leisure, training and emergency service needs in plans, but this is mainly in the context of promoting sustainable transport.

> "*When planning for ports, airports and airfields that are not subject to a separate national policy statement, plans should take account of their growth and role in serving business, leisure, training and emergency service needs. Plans should take account of this Framework as well as the principles set out in the relevant national policy statements and the Government Framework for UK Aviation.*"[60]

The NPPF does not make clear which aerodromes should be afforded protection (e.g. a list of safe guarded or strategic unlicensed aerodromes) and the weight to be attached to such sites in the planning balance. It is not clear to what extent local planning authorities have regard to such airfields when determining applications or formulating development plan policy.

Many aerodromes around the UK, especially unlicensed aerodromes, are under threat. The UK has already lost Plymouth and Filton in recent years, with other airfields at risk. The Isle of Wight had both its licensed airfields Sandown and Bembridge (the only IOW airfield with a hard runway) closed at one time; though both have since reopened as unlicensed aerodromes. The loss of airports used by GA is to the detriment of connectivity and local economies. .

3.1. BROWNFIELD SITES

Presently, many of the unlicensed aerodromes within the UK have been designated as brownfield sites in planning terms and, as such, this means that in accordance with government planning policy this provides greater potential for the sites to be allocated as land to be sold and redeveloped for housing purposes. This scenario is often realised where land is put forward and designated through the strategic housing land availability assessment prepared by the local authority, as a requirement of the local plan preparation. The national planning policy framework provides that:

> *"To boost significantly the supply of housing local authorities should...identify and update annually a supply of specific and deliverable sites sufficient to provide five years' worth of housing against their housing requirements with an additional 5% ... to ensure choice and competition in the market.*
>
> *Where there has been a record of persistent under delivery of housing, local planning authorities should increase the buffer to 20% (moved forward from later in the plan period) to provide a realistic prospect of achieving the planned supply and to ensure choice and competition in the market for land'"*[61]

[60] National Planning Policy Framework, para 33
[61] Para 47 of the NPPF

Due to the government's requirement to promote housing supply within the wider economy, many unlicensed aerodrome land owners are seizing the opportunity to designate the land for housing purposes under the local plan at the preparation stage. Consequently, it is envisaged that the continued availability of such unlicensed aerodromes will continue to decline and that they will be re-designated or developed for housing purposes.

It appears to the Panel that the majority of people, including local government and councils (for fiscal and housing delivery reasons) generally do not consider the potential economic value of aviation or unlicensed aerodromes. As a consequence, fewer individuals are willing to take the financial risk of set up and developing a site and this is a prohibition to encouraging growth in the sector.

3.2. MATERIAL CONSIDERATIONS

When a planning application is brought forward and submitted to the local planning authority in relation to the redevelopment of an unlicensed aerodrome site, the statutory test which must be applied by the decision maker provides that planning applications have to be determined in accordance with section 38(6) of the Planning and Compulsory Purchase Act 2004, as inserted into the Town and Country Planning Act 1990, which require:

> *"If regard is to be had to the development plan for the purpose of any determination to be made under the planning Acts the determination must be made in accordance with the plan unless material considerations indicate otherwise."*[62]

The interpretation of the development plan is not easy and there are a wide range of material considerations which can be weighed in the planning balance by the decision maker, who is usually the Local Planning Authority when determining an application.

Where a local development plan is in date and their housing policy is adopted, a determination of a planning application must be made in accordance with that plan. If an unlicensed aerodrome has been allocated for housing then the local planning authority should not refuse an application for planning permission e.g. for housing as it would not be following its own housing allocation policy.

Where a development plan is out of date (with saved policies) or is found to be unsound during the examination in public process then in accordance with the NPPF the presumption in favour of sustainable development has effect.

Where committees refuse such planning applications in favour of retaining such assets, there is the possibility of being overruled on appeal to the planning inspectorate by an inspector for being inconsistent with the NPPF.

The problem with current planning policy is that the allocation of these unlicensed sites as brown field, and their inclusion in the strategic housing land availability policy means that when applications for re-development are submitted to the local planning authority there is no planning policy to support their retention. These sites need to become a material consideration and safeguarded in order to carry weight at a planning committee and to allow committees to decide to determine such applications.

Certain aerodrome sites are safeguarded by virtue of being included specifically in the NPPF and mention of their inclusion in Annex 2. This also provides a definition of 'safeguarding zone' and specific sites within Circular 01/03. This includes safeguarding aerodromes, technical sites and military

[62] Section 38(6) of the Planning and Compulsory Purchase Act 2004

explosives storage areas to safeguard such sites. Smaller unlicensed sites are not included in this list and are often seen as unimportant.

In order to provide specific unlicensed aerodromes and the network sufficient protection by means of planning policy, a list of such sites could be prepared and consulted upon. Once a decision as to their inclusion has been reached it could form a part of the NPPF when it is next revised or updated. This would allow greater weight to be placed in favour of unlicensed aerodromes.

Alternatively, a letter could be drafted from the Chief Planner to all local authorities providing a list of sites to be safeguarded. The letter could be more general and provide that local planning authorities must have regard to the retention of such assets within their community.

There are opportunities for General Aviation sector to engage with the planning process to protect aerodromes from redevelopment, for example by working with their local community to prepare a neighbourhood plan. Before the publication of the final report, the Panel hopes to work further with DCLG and DfT to explore these opportunities further.

3.3. OTHER PLANNING ISSUES

The Panel also intends to consider planning issues further including in discussion with DCLG. This discussion will include other planning issues that have an impact on GA, such as the development of sites for wind turbines close to aerodromes.

4. THE IMPACT OF GOVERNMENT DEPARTMENTS ON GA

General Aviation is typically the concern of the CAA and of the Department for Transport (DfT). However, the policies of many other Government departments have significant impacts on GA, as illustrated by the discussion of planning above.

Among the GA sector, there is some dissatisfaction at the actions of government departments. There are accusations that a failure of 'joined up Government' is shown in policies that are in tension with one another – for example one department or agency endorsing training opportunities whilst another fails to provide the policy on tax or visas that limit the attractiveness of the UK as a flight-training destination. In particular, a student pilot who comes to the UK to learn English then train for a commercial licence must enter the UK to study English on a student visa, then leave the UK in order to apply for a tier-4 visa, interrupting their studies and adding unnecessary expense. Additionally, VAT is charged on commercial flight training in the UK, though this is not the case in several other European countries.

The Home Office has also been criticised for the system of GAR notifications, which is also the responsibility of HMRC. The Panel has been told that the revised GAR notification proposals are unreasonable and unworkable. The Panel will meet the Home Office Minister responsible for these areas in the next phase of work. The Panel has also asked the DfT to set up similar meetings with HM Treasury to examine GA taxation issues for the final report.

The Panel is also planning further work with other Government departments, alongside its ongoing discussions with the DfT. The Department for Communities and Local Government (DCLG) are the government department responsible for planning. They may have a role to play in providing central guidance to local authorities on the place aerodromes (especially unlicensed aerodromes) have within their communities and their role in serving business, leisure, training and emergency services, especially when considering them as part of local plans. The Panel has started to engage with policy officials from DCLG and the intention is to organise a meeting with the relevant people about the role DCLG can potentially play in supporting GA, especially when it comes to safeguarding unlicensed aerodromes.

The Department for Business, Innovation and Skills (BIS) is responsible for several areas relating to the health of GA, including training and apprenticeships in the UK. The Panel is expecting to meet officials from BIS to discuss what role BIS could play in supporting a vibrant GA sector.

5. GROWTH PROJECTS UPDATE

The GA Challenge Panel's terms of reference ask it to identify projects which they consider have the potential to promote growth and innovation in the GA sector. We have already made recommendations about how to promote innovation in general, and concerning an innovation project in electronic conspicuity in particular. This section discusses other projects the Panel has identified with opportunities to promote growth in the GA sector.

5.1. ECONOMIC RESEARCH

As was noted in the opening section, there is some evidence in the existing literature of the value of GA to the UK economy. However, existing numbers stem from several years ago, and there are significant gaps in our knowledge of how General Aviation currently impacts on GDP, how this impact breaks down by GA sector and what policy interventions could be used to grow GA and its contribution to the UK economy. We have already recommended that regular reviews of the economic value of GA should be conducted to allow evidence based regulation.

The focus here is on how this kind of economic research could be directly used to help GA grow. Economic research into how GA in the UK contributes direct and indirect benefits to the UK economy should include research into what interventions could affect this impact.

For instance, research suggests that in Europe the GA sector contributes to around 164,000 jobs as well as €9bn of value through aviation aircraft manufacturing[63]. Economic research could look at whether this economic benefit from the UK sector goes to UK companies (e.g. in supplying parts for small aircraft) or whether this goes to foreign companies. This potentially would allow identification of growth areas in the supply chain. Research could also investigate the economic benefits of providing flight training in the UK, and what policy interventions could be used to build the competitiveness of the UK training sector. This research could also identify key metrics for measuring the health and growth potential of the sector.

Outputs of this research might include:

- An understanding of the direct and indirect benefits of the GA sector.
- An analysis of whether these benefits go to UK based companies or foreign companies.
- An examination of the barriers faced for the GA sector to contribute to direct indirect benefits that contribute to the UK Exchequer.
- Recommendations based on these findings as to how to increase the indirect benefit contribution to the UK of the GA sector and the likely impact on the size of the GA sector as a whole.

We would expect some of the research to come from existing literature and data. However, it may that bespoke surveys will need to be carried out particularly in understanding the barriers faced to growing the economic benefits of GA in the UK. We would encourage the GA sector to participate fully and frankly in this research.

Recommendation 52: the DfT should:

- ***commission economic research into the direct and indirect benefits of General Aviation to the UK economy,***
- ***consider the case for Government intervention to increase the impact of General Aviation on the economy; and***

[63] The role of business aviation in the European Economy, Oxford Economics, 2012.

- ***if there is a good case, consider what interventions could be adopted.***

We would expect some of the research to come from existing literature and data. However, it may that bespoke surveys will need to be carried out particularly in understanding the barriers faced to growing the economic benefits of GA in the UK. We would encourage the GA sector to participate fully and frankly in this research.

5.2. PROMOTION OF GA

Despite its importance as an economic and employment sector for the UK economy, there is little visible co-ordinated marketing and promotion of UK GA. If it is to achieve the objective of becoming a worldwide leader in GA, then the UK GA sector must become more visible and publicly celebrate its strengths.

The Panel is keen to see work on the value of GA that acknowledges the role GA has in producing qualitative benefits – for example the health benefits of sport-flying and the fact that airshows are the second most popular outdoor participation event in the UK, after football.[64]

The Panel would welcome further work on the qualitative benefits and positive impacts of GA, to encourage further participation in GA as both a leisure activity and as a career.

The Panel would like to see the GA Industry supported, promoted and through a focussed marketing effort. This might include adding to the sector's existing excellent work with schools and youth organisations, such as the "build a plane" project, or new projects to promote the benefits of GA , increase the level of participation, and facilitate future aviation careers. Airshows and introductory flying at air sports clubs, are good opportunities for the public to learn about and engage with GA, but are increasingly 'hidden' due to regulatory restrictions discussed elsewhere in the report, and by other restrictions in the name of health and safety. The CAA and DfT should work to facilitate rather than hinder public engagement with GA.

5.3. MANUFACTURE

While the UK does not produce large volumes of GA aircraft, there are a small number of specialist manufacturers. The Panel recognises that it does not have a clear picture of the issues currently facing the General Aviation manufacturing sector in the UK. A number of SMEs have been identified which are engaged in the manufacture of sport and recreational GA aircraft. It is considered that it might be helpful to try and ascertain what their views are on the constraints to the growth of their business , particularly the main factors that are currently influencing the growth of the sector, where the opportunities to grow the sector are and the key challenges currently facing the industry. This information may then be used inform the Panel's final recommendations.

Recommendation 53: the DFT should write direct to a number of SMEs engaged in the manufacture of light aircraft to seek their views on what they consider to be the constraints to growth of their business ;and for this exercise to be low key and not a formal consultation and with a response due date of mid-February 2014.

[64] Flyer Magazine, February 2014

A growth in UK manufacturing in GA may support upgrades of the UK training fleet, which the Panel understands has scope for modernisation.

5.4. TRAINING PILOTS AND ENGINEERS

The Panel will be undertaking more work to identify how the UK might capitalise on the increasing worldwide demand for Commercial Pilots and Engineers and their associated training requirements. Industry forecasts suggest that in the next 20 years, there will be need for 498,000 new commercial airline pilots and 556,000 new maintenance technicians worldwide. The largest growth in demand is expected in the Asia-Pacific region, but 20% of this growth is expected in Europe. [65] This predicted need for new pilots and technicians should be viewed in the context of 33,500 new aircraft predicted to be required worldwide over the next 20 years, and 227,000 pilots expected to retire in the same time period.[66]

> *"All of aviation begins and ends with student pilots, for without student pilots there can be no aviation development in the future. Europe has made itself and the UK less competitive in the global market and it is our view that the Government needs to ensure we have the ability to take part in the global market."*[67]

The UK has a unique place in the history of flight training – from the original Central Flying School established in 1912, to Hamble College of Air Training in the 1960s, and the UK's modern day world leaders in integrated flight training – there has always been a significant and proud tradition of aviation present in the UK.

Despite this, in recent years the UK has in many ways fallen behind in the global race to train the next generation of pilots: at the recreational level the USA has long become a popular destination to complete a PPL, and at the commercial level many integrated schools have either moved fully or partially abroad while leaving many of the UK's smaller modular schools to fight a running battle with spiralling costs and paperwork. Some of the UK's leading flight schools such as Oxford Aviation have major bases in the USA and some such as FTE have moved their entire operations, to places such as Jerez in Spain. Others such as Air Service Training in Perth have simply fallen by the wayside. The last of the major integrated schools of flight training to conduct all training in the UK, Cabair, ceased trading in 2011.

While the UK does have some inherent problems, such as weather that is not always conducive to basic training, it also has advantages such as the use of the English language and historically high standards in training and testing.

While true pilot shortages are unlikely to persist for long no one in the industry seriously doubts that the overall trend in pilot training will be up in the future. The world will need more pilots even if many of them will be needed outside of Europe and North America. The question then becomes where those pilots will be trained. If the UK was more competitive, a larger share of that growing market could be captured.

It is worth emphasising the connections between flight training for commercial licences and General Aviation. First, flight training is itself a form of General Aviation activity. Second, it is worth considering that, in 2006, 59% of CPL holders trained through the modular training route,[68] meaning

[65] Boeing Pilot & Technician Outlook 2013
[66] Boeing Market Outlook Report 2011
[67] AOPA UK response to CAP1123
[68] CAA Strategic Review of General Aviation, 2006

that in all likelihood many completed PPLs at relatively small training establishments prior to moving onto their commercial training. We are not aware of any evidence to suggest this has changed since then. Third, it is widely reported that many applicants to integrated flight training schools often have PPLs and significant flying experience prior to enrolment, underlining the importance of General Aviation activity in fostering the enthusiasm for flight training that leads to involvement in the commercial aviation world. The Panel generally considers the growth of both private and commercial flight training in the UK to be very positive for recovery and future growth in GA.

On the recreational side, private flying in light aircraft arguably has to compete with a much wider range of other activities than in the past when vying for the time and money of participants. The long term decline in PPLs being issued[69], and just as significantly reports of relatively low number of PPL holders that remain active for more than a few years after qualifying, shows that for whatever reason flying often fails to sustain people's interest whether that be because of cost, of the difficulty of maintaining currency, or indeed because PPLs haven't been trained and developed to a standard that enables them to retain their confidence and increase their skills and experience by acquiring additional ratings or undertaking more challenging flights to, for instance, overseas destinations. By deregulating and encouraging growth, the cost and accessibility would hopefully be improved, encouraging PPL holders to remain active and develop their skills.

A number of UK regional airports have hosted extensive GA and Commercial Flight Training in the past. E.g. Prestwick. Changes in the Commercial air transport sector and patterns of service, thus traffic have left a number of UK regional airports with less overall activity than before. Facilitating the development of additional flight and aeronautical engineering schools at such facilities would potentially facilitate the UK gaining a greater share of the growing demand for such training worldwide whilst contributing to regional development and to retention of valuable airport capacity, and underwriting the renaissance of UK GA.

Equally important is the continued development of the market for other aviation skills, particularly engineers in the maintenance sector. The 2006 Strategic Review of General Aviation noted the increasing age of engineers at the GA level and concerns that the next generation seemed under developed. And as noted above, considerable international need for commercial aviation engineers is forecast. As with pilot training, there is an opportunity here for the UK to take advantage of increased global demand for engineering training, as well as making sure that initiatives to develop this skills base meets the needs of GA. There is also an opportunity to take advantage of the excellent worldwide reputation of the UK education system, as set out in the HM Government Industrial Strategy[70].

The Panel is aware of BBGA proposals for an Aviation Services Skills Council. The Royal Aeronautical Society is also active in this area. There is also potential to support aviation skills training coming out of the Department for Business, Innovation and Skills (BIS) initiatives on apprenticeships. The Panel fully supports BIS's aspirations to improve the quality of apprenticeships, and to help make apprenticeships more relevant to employers. The Panel also supports applications put forward by GA organisations to develop apprenticeships under these reforms as part of the Trailblazer pilots[71]. In the GA context, the Panel would like to see apprenticeships at SME level improved, both in terms of funding and in terms of the relevance of the training. The Panel's initial impression is that there needs

[69] See the section on recent trends in GA

[70] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229844/bis-13-1081-international-education-global-growth-and-prosperity.pdf

[71] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/253075/bis-13-p194-future-of-apprenticeships-in-england-guidance-for-trailblazers.pdf

to be a clearer understanding of the distinctions between different branches of the aerospace sector, for example organisations in the maintenance and repairs sector have different requirements from those of manufacture. There also needs to be a more effective marrying of academic and practical skills in apprentice training. The Panel is planning further work with BIS on this issue.

A remaining issue is how much training costs and how these costs are met by trainees. Various attempts by the industry over the years have tried and failed to make commercial flight training VAT exempt or zero-rated. The 2006 GA Strategic Review[72] recommended that the Government consider whether the current VAT treatment places UK flying schools at a competitive disadvantage to those based in other countries, but to the knowledge of the Panel, the Government has not reviewed this. It is probably unrealistic to get all flight training zero-rated or exempt, but considering that commercial training is not charged VAT in Germany, Ireland, Spain and probably a number of other EU countries, it doesn't seem unreasonable to think that could be made the case in the UK. The Panel believes that it might be possible to build evidence to make a case to review the application of VAT on flight training. . The research on how to grow the value of GA to the UK economy, recommended above, might inform that case.

In addition, the Panel's preliminary view is that more support could be given to student pilots in funding their flight training. The *Panel would like to see the current pilot apprenticeship arrangements* do more *in terms of actually impacting on the amount of finance and grants available on a student loan basis, and the Panel will work further with BIS to see what can be done in this area.*

[72] http://www.caa.co.uk/docs/33/StrategicReviewGA.pdf

6. CONCLUDING REMARKS

This interim report has provided evidence that the last ten years have seen a mixed picture in the health of GA, with a decline in some key areas. It is crucial to maintain a healthy GA sector if the UK is to become a world leader in the sector.

The report discusses some of the limits on growth in the GA sector, including the economic and fiscal environment, and the burden of regulation on GA.

The Panel welcomes the work that the CAA and EASA is doing to make regulation and regulatory oversight of GA more proportionate and evidence-based. However, the Panel notes that the CAA programme is still in its early stages, and the CAA must ensure its good intentions translate into real benefits for UK General Aviation, and subsequently for the UK as a whole. The Panel has highlighted many specific instances where the CAA could do more to make GA regulation fairer and more proportionate, and has made recommendations for how the CAA can engage with EASA to ensure European regulation of GA is also proportionate.

The Panel has identified some proposals with potential to grow GA in the UK, including economic research, work to support manufacturing of GA craft, and work to facilitate aviation training in the UK.

The Panel believes that a greater level of cooperation and coordination of policy between Government departments, such as on planning and training, would protect GA and support future growth in the sector

There is much still to be done, in the shorter term by the Panel, and in the longer term by the CAA and UK Government. A final report will be presented to Ministers in April 2014, and in the meantime the Panel looks forward to further work with the CAA, the Government, and with the GA sector as a whole.

ANNEX A: LIST OF RECOMMENDATIONS

Recommendation 1: regular economic research should be conducted into the value of GA to the UK economy.

Recommendation 2: the CAA should collect data on GA in a way that balances proportionality in the cost and burden of collection with the need to have a sound evidence-base when making regulatory decisions.

Recommendation 3: the CAA should, where possible and proportionate, analyse and make available the data on GA it collects.

Recommendation 4: GA programme success should be measured by outcome focussed, robust data that can be proportionately collected or is already collected but not analysed, and can be used as a metric without creating unintended consequence.

Recommendation 5: the CAA GA Unit should consider a range of measures for success (including hours flown, aerodrome numbers, safety levels, charges to the GA sector, the proportion of craft operated from the UK not on the UK register, impact assessments, and pilot medicals), and regularly publish data on several different measures of success.

Recommendation 6: the CAA publish an annual report of activities undertaken that will change the cost or burden of compliance for GA.

Recommendation 7: the CAA be given a duty to have regard to the desirability of promoting economic growth, and for the CAA to consider opportunities for GA to contribute to economic growth when carrying out that duty.

Recommendation 8: the UK should support the European Commission's proposal to change EU legislation to give EASA objectives that balance safety, growth and a proportionate approach to risk.

Recommendation 9: the Government should review the requirement that the CAA provide a 6% return on capital.

Recommendation 10: the CAA should work to ensure that positive changes in its culture of GA regulation permeate throughout the organisation.

Recommendation 11: the CAA should work to communicate clearly with the GA sector in developing and communicating regulatory decisions.

Recommendation 12: the CAA should establish regular meetings between the CAA CEO and senior staff and frontline GA practitioners to improve communication between the CAA and those it regulates in discussions of the impact of CAA regulation and oversight.

Recommendation 13: the CAA should focus efforts on explaining the EASA regulatory framework and the rationale behind it, using links to the original regulations where feasible.

Recommendation 14: the CAA should set out the cultural and organisational measures it will take to protect and reward good management of total system safety in accordance with the risk-based proportionate approach.

Recommendation 15: the Government should ensure that the legal framework supports good management of total system safety in accordance with the risk-based proportionate approach, and protects individuals from civil liability where they make decisions in accordance with that approach.

Recommendation 16: the CAA should work with the European Commission and EASA to ensure that the UK framework for the regulation of promotional flights is consistent with the European framework, and to develop a common understanding of 'informed consent'.

Recommendation 17: the CAA should develop clear, quantitative target level of safety (allowable risk levels) for each different class of stakeholder exposed to risk, against which potential regulatory interventions can be assessed. It may be necessary to specify a marginal expenditure of resource to be compared with the risk (e.g. the Value of Preventing a Fatality) for stakeholders with little or no control over their risk exposure.

Recommendation 18: the CAA should carefully consider the cost-benefit of all certification and approval processes over which it has discretion, and apply criteria of cost (including compliance costs and time, as well as fees) vs benefit (including confidence and complexity factors) to decide if certification/approval is warranted.

Recommendation 19: where EU regulation requires certification or approval that is not supported by a favourable cost benefit, the CAA should apply the lightest possible touch to such processes to minimise compliance burden, and where appropriate, lobby for changes to the EU regulation.

Recommendation 20: the Government should, with immediate effect, issue a general exemption from the requirement to obtain permission for paid flight instruction to the owner (or joint owners) of a foreign-registered aircraft.

Recommendation 21: the Government should review the value added by the current regulatory framework for aerial work in foreign-registered aircraft and consider entirely removing the requirement to obtain permission.

Recommendation 22: the CAA should cease its practice of requiring certified version of documents submitted in support of licence applications.

Recommendation 23: the CAA should use impact assessments to conduct a genuine exploration of options, not to justify simplistic make-rule vs do-nothing options.

Recommendation 24: the CAA should consider in all impact assessments strategies to mitigate the effects on GA, and small businesses, and on other classes of affected stakeholder for whom benefits may be limited and costs disproportionate.

Recommendation 25: where impact assessments depend on cost-benefit arguments, the CAA should a) pay particular attention to the sensitivity of costs and benefits to any assumptions

made, particularly forecasts in relation to system capacity; and b) conduct a post-hoc review of the actual costs incurred and benefits delivered in practice to improve the quality and reliability of future impact assessments.

Recommendation 26: the CAA should review and update all policies on GNSS usage to address practical risk compared to the status quo, not theoretical risk against an arbitrary standard. It should also seek to accelerate the introduction of GPS approaches to a larger number of UK GA focused airfields.

Recommendation 27: the CAA should design policies and procedures for ensuring that:

- where possible innovative new technologies are assessed for benefit vs risk against current technologies on the basis of practical risk, not hypothetical hazard, using available information and data;
- operational experience of new technologies can be incorporated into regulation in a timely and effective review process; and
- due consideration is given to experience with such technologies in other, early-adopter states.

Recommendation 28: the CAA should carefully consider differences to ICAO standards, in particular phraseology and terminology, to evaluate whether the safety advantage of the UK difference is outweighed by the potential confusion to affected stakeholders.

Recommendation 29: the CAA should review the classification of lower airways and some Terminal Manoeuvring Areas (TMAs) as class A airspace, with a view to the use of class C or class D airspace in its place.

Recommendation 30: the Government should require, as a matter of public policy, that reasonable access under Visual Flight Rules to controlled airspace is provided by Air Navigation Service Providers offering Air Traffic Control within that airspace, to users who are not the intended beneficiary of the airspace, at the cost of the intended beneficiaries of the airspace classification and at no cost to other users.

Recommendation 31: the CAA should review airspace design guidelines to ensure that controlled airspace reflects practical operational requirements, not theoretical requirements.

Recommendation 32: the Government should implement, as a matter of public policy, an ongoing charge per unit volume to Air Navigation Service Providers who service controlled airspace, to incentivise efficient use of airspace as a shared resource.

Recommendation 33: designation of controlled airspace should be reviewed on a regular basis to confirm whether it is still justified against the original specification.

Recommendation 34: the CAA should facilitate the work of the FAS VFR Implementation Group to deliver significant improvements for GA.

Recommendation 35: the CAA should align national navigation equipment carriage requirements (Schedule 5 of the ANO) for General Aviation operators with those in EASA's Part-NCO as soon as possible, limiting any "airspace requirements" to requirements for compliance with Performance Based Navigation specifications.

Recommendation 36: the CAA should continue to support work on electronic conspicuity in collaboration with a broad range of stakeholders.

Recommendation 37: adoption of electronic conspicuity technology should be encouraged by the delivery of benefit to users who choose to equip with it and not mandated by regulation.

Recommendation 38: the CAA should ensure that:

- the ADS-B project is managed by the CAA's GA Unit;
- a project plan and progress report on it is submitted in time for consideration by the Panel ahead of its final report;
- the necessary work is taken forward as a matter of some urgency with a completion date of April 2015;
- the GA Unit should also seek other possible funding options both to help the project and also to take forward its outcome after April 2015; and
- the GA Unit should draw up a longer-term project plan to deliver the desired outcome as soon as practicable and taking into account any manufacturing and financial constraints.

Recommendation 39: the CAA should be mindful of the interface between EU regulation and its UK implementation. Where EU regulation does not appear to offer an acceptable regulatory solution through any reasonable interpretation, it should engage with EASA and the European Commission to resolve issues at their source. In doing so, in the interest of harmonisation, it should, wherever possible, work to achieve better regulation at the EU level, rather than seeking national exemptions or applying additional measures applicable only for the UK or to UK stakeholders.

Recommendation 40: when stakeholders challenge regulation as unreasonable, the CAA should either take responsibility for the safety basis of the regulation or identify the steps it is taking with EASA and the European Commission to improve the regulation in question.

Recommendation 41: The CAA should seek clarity from the European Commission on the intention and interpretation of Article 9 of the SERA regulation, and, if necessary, withdraw proposed national rules that are more restrictive than SERA equivalents but cover substantially the same subject matter.

Recommendation 42: the CAA should revise its interpretation of the term 'passenger' for the purposes of Part-FCL to avoid adverse consequences, and should offer guidance accordingly.

Recommendation 43: the CAA should continue its efforts to eliminate 'gold-plating', and should ensure that those responsible for drafting policy and implementing rules understand the principles behind this initiative.

Recommendation 44: the UK Government and CAA should continue actively to support the European GA Safety Strategy and Roadmap for Regulation of GA.

Recommendation 45: the CAA should:

- support the initiatives of the GA sub-committee of EASA's Safety Standards Consultative Committee and endorse its document on issues in current regulation adversely affecting GA;
- engage strongly (for example via a working group of national aviation authorities) in EASA's work to find solutions to improve EU regulation of GA; and
- ensure consistency of this work with UK national regulatory policy

Recommendation 46: the CAA should, once again, pursue the case with the Commission and EASA for a medical declaration to be used instead of a medical assessment for GA pilots, with limitations consistent with the principles of risk-based safety and informed consent, using the evidence base it has from UK NPPL and glider operations.

Recommendation 47: the CAA should continue to engage with the work of the Part-M GA taskforce, and work for a reduction in the administrative burden for GA maintenance.

Recommendation 48: The CAA should engage with other NAAs to examine the potential of joint development of systems and procedures to support implementation of EU regulation.

Recommendation 49: the CAA should engage with other NAAs (particularly those of neighbouring member states) to ensure that cross-border training and aerial work is facilitated appropriately.

Recommendation 50: the CAA should review the lessons from the early adoption of Part-FCL to inform any future decisions on derogations.

Recommendation 51: the CAA should review the consequences of the duality of EU and national regulation in all domains and take a strategic approach that balances the advantages of standardisation with the need to retain flexibility.

Recommendation 52: the DfT should:

- commission economic research into the direct and indirect benefits of General Aviation to the UK economy,
- consider the case for Government intervention to increase the impact of General Aviation on the economy; and
- if there is a good case, consider what interventions could be adopted.

Recommendation 53: the DFT should write direct to a number of SMEs engaged in the manufacture of light aircraft to seek their views on what they consider to be the constraints to growth of their business ;and for this exercise to be low key and not a formal consultation and with a response due date of mid-February 2014.

ANNEX B: SWOT ANALYSIS

STRENGTHS

- Use of English language
- UK history of aviation participation and innovation
- Operates under internationally respected CAA regulatory oversight regime
- UK accepted high standards

WEAKNESS

- High cost regime and level of tax (VAT on flight training) compared to some other EU countries and the USA.
- Weather
- Relatively high amount of controlled / restricted airspace
- Relative age / efficiency of training fleet

OPPORTUNITIES

- GA Red Tape Challenge initiative – positive Government policy
- UK investment in and leadership in world aerospace
- Growth in air transport demand – need for pilots and engineers to be trained thus help GA sector base activity
- Strongly established UK interest in GA with apparent potential for future growth

THREATS

- Failure to invest and create favourable GA policy framework
- Overseas competition for training and GA aircraft / component / systems / accessory supply
- Excess regulation and taxation
- Loss of GA airfields and increased operating restrictions

ANNEX C: GLOSARY OF ACRONYMS

ICAO	International Civil Aviation Organisation
EASA	European Aviation Safety Agency
SEP	Single-Engine Piston
FAA	Federal Aviation Administration
NAA	National Aviation Authority
BGA	British Gliding Association
ATO	Approved Training Organisation
NPPL	National Private Pilot's Licence
PPL	Private Pilot's Licence
LAPL	Light Aircraft Pilot's Licence
ATPL	Airline Transport Pilot's Licence
CPL	Commercial Pilot's Licence
FTOs	Flight Training Organisation
SSR	Secondary Surveillance Radar
ATC	Air Traffic Control
ADF	Automatic Direction Finder
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
VFR	Visual Flight Rules
IFR	Instrument Flight Rules
NDB	Non-directional Beacon
ADS-B	Automatic Dependent Surveillance Broadcast
SARPs	Standards And Recommended Practices
FAS	Future Airspace Strategy
NATMAC	National Air Traffic Management Advisory Committee
SES	Single European Sky

SESAR	Single European Sky ATM Research
SESAR JU	SESAR Joint Undertaking
ATM	Air-Traffic Management
TMZ	Transponder Mandatory Zone
MTOW	Maximum Take-off Weight
OPS	Operations
ATM	Air Traffic Management
ADR	Aerodromes
FCL	Flight Crew Licensing
Part-21	the European regulation dealing with design of aircraft and parts
Part-M	the European regulation dealing with maintenance
Part-FCL	the European regulation dealing with flight crew licensing
Part-MED	the European regulation dealing with medical requirements
Part-NCO	the European regulation dealing with non-commercial operations