



Review of Safety Implications of Operations at Farnborough Airport

P1035/R1/Issue 1

Report prepared on behalf of Rushmoor Borough Council

January 2014

Eddowes Aviation Safety Ltd

Specialist Aviation Assessments

Authorisation Sheet

Report Title:	Review of Safety Implications of Operations at Farnborough Airport
Client:	Rushmoor Borough Council
Project Reference:	P1035
Report Number:	P1035/R1
Issue:	Issue 1 (2014 01 08)
Distribution List:	

Issued by:	Mark Eddowes		8 January 2014
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Summary

Work undertaken on behalf of Rushmoor Borough Council in 2009 considered the safety implications of future business aviation at Farnborough Airport, as outlined in the 2009 report on “Safety Implications of Business Aviation at Farnborough Airport” (the 2009 Report). This report informed the development of the “Preferred Approach” version of the Farnborough Airport Area Action Plan (FAAAP). Since then, there have been some significant developments that have a potential direct bearing on the evolution of detailed policies relating to the Airport, including in particular:

- The granting of a planning application to vary a condition to allow up to 50,000 annual air traffic movements on appeal in 2010.
- The adoption of Rushmoor’s Core Strategy as part of the Development Plan in October 2011.
- The publication of the National Planning Policy Framework (NPPF) in March 2012.
- The publication of the Aviation Policy Framework (APF) in March 2013.

The Council is now working on the second part of its Local Plan, the Delivering Development DPD, and is seeking to develop detailed policy that will help to deliver the planning framework set out within the Core Strategy up until 2027. The issues originally explored within the FAAAP will now be delivered within the “Delivering Development” document. Given the recent developments, an external audit is now necessary to determine whether anything has changed fundamentally in the years since the original safety report was prepared. In this context, Rushmoor Borough Council has identified a number of specific questions to be considered in the review. The review findings in respect of these questions are summarised as follows:

- 1 Nothing new within the Aviation Policy Framework or National Planning Policy Framework is identified that would significantly alter the views set out within Section 3.3 of the 2009 Report regarding the policy context. The National Planning Policy Framework is underpinned by a “presumption in favour of sustainable development” which is consistent with the general presumption in favour of development identified in the statute which sets the planning context in place both now and at the time of the 2009 Report. The Framework requires that Local Plans should meet objectively assessed needs unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits. This balancing process would therefore appear to be essentially the same as that which has previously been adopted in planning. The Aviation Policy Framework confirms the continued use of PSZ policy as a measure for managing safety in the vicinity of airports. It identifies the impact on people and the natural environment; and proposals to minimise and mitigate impacts as two ‘core’ areas to be addressed in a master plan for airport development. Safety impacts are not identified explicitly but are evidently included as part of the broad category of the impact on people. The approach in the 2009 Report is consistent with the Aviation Policy Framework in these respects.
- 2 No fundamental changes in risk assessment methodology that would significantly alter the approach taken in the 2009 Report have been identified. Risk estimates that underpin PSZ policy continue to be produced using an empirical model based on historical accident data. Whilst some of the details of this model may be refined over time, as more historical data becomes available, it is difficult to envisage a fundamentally different approach to risk assessment being viable.
- 3 The underlying assumptions regarding the cost-benefit analysis are considered to still be sound. Whilst cost-benefit analysis is not explicitly required to be employed to support

planning decisions, current UK Government guidance recognises that policy makers need to address certain risks to the public and advocates the use of CBA, stating that once options for addressing risk have been identified, “they should be assessed by estimating their costs and benefits, and/or by their cost effectiveness.” The UK Health & Safety Executive provides guidance on the use of CBA to support safety management decision-making. The analysis presented in the 2009 Report is consistent with this guidance and, on that basis, the general approach that is adopted is regarded to be sound. The specific assumptions regarding the scale and nature of operations at Farnborough Airport employed in the 2009 Report are consistent with current and anticipated future operations and therefore are confirmed to be valid. Consideration of the assumption regarding the value of prevention of a fatality that has been employed shows that revision of this figure to take account of price inflation would not fundamentally alter the nature of the cost-benefit balance.

- 4 The increased total number of movements under the revised planning permission of 50,000 movements is subject to the same weight restriction condition of 1,500 movements per annum for aircraft in the 50-80 tonne category as the previous permission for 28,000 movements. The implications of these weight restrictions at the airport, as considered in Section 6 of the 2009 Report, are not altered in any way by the nature of the changes. The 2009 Report concluded that the annual movement limit of 1,500 on aircraft in the 50 to 80 tonne category was currently having no real impact on the operational fleet mix or on safety since the demand for operations within that category is significantly below that limit. It further concluded that, provided that the current business aviation model continues to be followed by the airport operator, it would appear that this situation is likely to continue. With an increase in the total number of movements permitted to 50,000 per annum, provided that there were to be no significant increase in the proportion of aircraft within the 50-80 tonne category in future those conclusions would remain valid in respect of the current permission.
- 5 The significance of the weight condition arises from the dependence of both noise and safety impacts on weight. Maintaining the condition provides a guarantee under the terms of the current planning permission that certain levels should not be exceeded. Whether the specific numbers of movements identified in the condition are appropriate for replication in policy is perhaps a different matter. A broader policy that identifies weight restriction as a means of managing both noise and safety impacts might be considered more appropriate without necessarily identifying specific numbers. As a minimum, such a policy principle would appear to merit inclusion in policy.
- 6 When discussing the implications of an increase in movements to 50,000 per annum, it is reported in Section 7.4 of the 2009 Report that the safety impacts associated with the increase in risk would be significant but not exceptional. These judgements were made by reference to HSE guidance on the evaluation of both individual and societal risk significance which are based on the consideration of the risks associated with a range of other activities and the risks associated with operations at other airports. These criteria have not changed since the original conclusions were made and there have been no developments concerning the quantification of risk and the evaluation of its significance that would in any way alter those conclusions. It is therefore confirmed that those conclusions remain valid.
- 7 Further modelling for future growth forecasts might be of value if it were to provide answers to questions that cannot readily be addressed by reference to the findings of previous studies that are already available as guidance. A range of risk information is already available, including PSZs for 28,000 and 50,000 movements per annum, based on slightly different modelling assumptions, 1 in 10,000, 1 in 100,000 and 1 in a million annual individual risk contours for 28,000, 35,000, 50,000 and 60,000 movements per

annum, as presented in the 2009 Report and societal risk estimates for 28,000 and 50,000 movements per annum, also presented in the 2009 Report. It would seem that this information should already provide an effective insight into the likely impacts of future growth which can adequately guide most planning decisions. There would appear to be little if any benefit in the Council embarking on any further risk modelling unless there were some specific questions that could not be adequately informed by this available information.

8 In his summing up of safety matters, the 2010 Planning Appeal Inspector stated that the fact that permission already existed for operations anticipated to result in a larger PSZ is strongly indicative that a greater level of third party risk has already been deemed acceptable. This seems to be an entirely logical interpretation of matters and it is not surprising that the inspector may have considered this precedent to provide useful support for his overall appeal decision. However, significant weight should not necessarily be placed on this precedent alone without confirming its validity. Weight would be better placed primarily on an objective assessment of the most up-to-date risk information against which the validity of the precedent can be evaluated. It is evident from a wider reading of the inspector's report that there is somewhat more behind his overall conclusions which drew on the following observations:

- The number of developments contained within the PSZs can be taken as a rough proxy for the quantum of third party risk associated with operations. When assessed on a like-for-like basis using the same modelling assumptions in respect of aircraft crash rates, the number of residential and commercial developments falling within the PSZ would more than double from 174 for 28,000 movements per annum to 372 for 50,000 movements per annum.
- As concluded in the 2009 Report, the risks could be considered to be significant but not exceptional when compared with risks encountered at other airports or with other risks that arise from a range of hazards accepted in society in return for their benefits.

Thus the inspector properly recognised a real increase in risk associated with the increase in movements but found that level of risk acceptable when weighed in the balance with other factors.

9 Criteria c and d of Policy SP6 of the Core Strategy essentially represent objective based elements of policy that place limits on the level of risk to which areas in the vicinity of the airport are exposed. They are consistent with Conditions 12 and 13 of the current planning permission. Criterion c limits the extent of the 1:10,000 per annum risk contour and prevents it from encroaching on areas where that would introduce a potential conflict with existing land uses and PSZ policy could require clearance of existing development. Criterion d places objective based controls on the risks to which areas of existing development are exposed, limiting risks to a level that was deemed to be acceptable within the overall planning balance. On that basis they are judged to be appropriate policy approaches for the management of risk associated with business aviation operations at Farnborough Airport over the plan period.

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1 Introduction

- 1.1. Work undertaken on behalf of Rushmoor Borough Council in 2009 considered the safety implications of future business aviation at Farnborough Airport, as outlined in the 2009 report on “Safety Implications of Business Aviation at Farnborough Airport” (the 2009 Report). This report informed the development of the “Preferred Approach” version of the Farnborough Airport Area Action Plan (FAAAP) and the emerging Rushmoor Core Strategy. Since then, there have been some significant developments that have a potential direct bearing on the evolution of detailed policies relating to the Airport, including in particular:
- The granting of a planning application to vary a condition to allow up to 50,000 annual air traffic movements on appeal in 2010.
 - The adoption of Rushmoor’s Core Strategy as part of the Development Plan in October 2011.
 - The publication of the National Planning Policy Framework (NPPF) in March 2012.
 - The publication of the Aviation Policy Framework (APF) in March 2013.
- 1.2. The Council is now working on the second part of its Local Plan, the Delivering Development DPD, and is seeking to develop detailed policy that will help to deliver the planning framework set out within the Core Strategy up until 2027. The issues originally explored within the FAAAP will now be delivered within the “Delivering Development” document.
- 1.3. Given the recent developments, an external audit is now necessary to determine whether anything has changed fundamentally in the years since the original safety report was prepared. It is vital that any detailed policy relating to the Airport has a strong evidential basis and that it complies with existing planning and aviation policy.
- 1.4. The Council therefore requires a review of the documents produced to inform the FAAAP as well as consideration of the outputs from the 2010 appeal and the recent policy updates. Comment is required on what impacts recent developments may have on the conclusions contained within the 2009 Report.
- 1.5. Rushmoor Borough Council has identified a number of specific questions to be considered in the review which are as follows:
1. Is there anything within the Aviation Policy Framework or National Planning Policy Framework that would significantly alter the views set out within Section 3.3 of the 2009 Report regarding the policy context?
 2. Have there been any fundamental changes in risk assessment methodology that would significantly alter the approach taken?
 3. Are the underlying assumptions regarding cost benefit analysis still sound?
 4. Are there any further implications of weight restrictions at the airport, as considered in Section 6 of the 2009 Report, given that despite the increase in annual movements, the existing restriction remains as a condition attached to the planning consent?
“With the exception of up to 1,500 movements per annum by aircraft not exceeding 80,000 Kg maximum take-off weight, no aircraft exceeding 50,000 Kg maximum take-off weight and no helicopters exceeding 10,000 Kg maximum take-off weight shall take-off or land at the Aerodrome pursuant to this

permission”.

5. Does the above condition need to be replicated in policy?
6. When discussing the implications of an increase in movements to 50,000 per annum, it is reported in Section 7.4 of the 2009 Report that the safety impacts associated with the increase in risk would be significant but not exceptional. Given that this is now the current permission, is this view still valid?
7. TAG has confirmed that it is not currently its intention to seek any changes to its existing operations by way of applying to vary existing planning controls prior to 2019. What would be the value of undertaking further modelling for future growth forecasts using the current model and modelling assumptions?
8. In his summing up of safety matters, the 2010 Planning Appeal Inspector stated that the fact that permission already existed for operations anticipated to result in a larger PSZ is strongly indicative that a greater level of third party risk has already been deemed acceptable. Rushmoor Borough Council seeks an assessment of this statement in light of the current permission.
9. Are criteria c and d of Policy SP6 of the Core Strategy an appropriate basis for addressing the safety implications of any proposals to change the pattern, nature or number of movements over the plan period to 2027?

2 Review Comments

2.1 POLICY FRAMEWORK CONSIDERATIONS

2.1.1 National Planning Policy Framework

- 2.1 The National Planning Policy Framework identifies a “*presumption in favour of sustainable development*” as being at the heart of planning and decisions in relation to development control. This approach would appear to be fundamentally the same as the general presumption in favour of development identified in the statute. In the context of plan-making, the Framework states that local planning authorities should positively seek opportunities to meet the development needs of their area and that Local Plans should meet objectively assessed needs unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the Framework taken as a whole. This balancing process would appear to be essentially the same as that which has previously been adopted in planning.
- 2.2 The Framework provides the following statement as guidance in relation to airport developments:
“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.”
- 2.3 Other references to aviation safety within the Framework relate to ensuring that safety is not compromised by new development and would appear not to have any direct relevance to the Delivering Development DPD.
- 2.4 Overall, the general approach to be adopted by Rushmoor Borough Council in taking forward the Delivering Development DPD will therefore not be altered from the approach that it had been employing prior to the appearance of the Framework.

2.1.2 Aviation Policy Framework

- 2.5 Many of the references to safety in the Aviation Policy Framework relate to the maintenance of high standards of operational safety and are not of direct relevance to the current review. It includes three paragraphs under the heading of “Public Safety Zones” within the chapter on “Planning” which essentially reaffirms the continued use of PSZ policy, as was previously in place at the time that the FAAAP was being drafted. The position outlined in the framework is summarised by the following statement:
“For people living and working near airports, safety is best assured by ensuring the safe operation of aircraft in flight. However, in areas where accidents are most likely to occur we seek to control the number of people at risk through the public safety zone (PSZ) system.”
- 2.6 Reference is made to DfT Circular 01/2010, on the Control of Development in Airport Public Safety Zones. This circular replaced DfT Circular 01/2002 on the Control of Development in Airport Public Safety Zones that was in place when the 2009 Report was prepared. The policy in the revised circular is not altered from that in the earlier circular, the revised circular having been issued to take account of the shift in day-to-day

administrative responsibilities for implementing Public Safety Zone (PSZ) policy from the Department for Transport to the Civil Aviation Authority (CAA). Possible aviation-related constraints on the future use of sites within the area that was covered by the draft FAAAP, other than the airport itself, which are potentially governed by PSZ policy, are therefore not altered in any way by the Aviation Policy Framework.

- 2.7 The section in the Aviation Policy Framework on PSZs includes the following statement:
“We will continue to protect those living near airports by maintaining and, where justified, extending the PSZ system.”

Whilst it may be noted that PSZs provide no protection to those people already living near airports other than by means of their compulsory relocation, with financial compensation, in the event that their homes become part of the 1 in 10,000 per annum risk contour as airport activity grows in line with an existing planning consent, this statement evidently reaffirms the longer-term commitment of the government to the PSZ approach.

- 2.8 As regards airport development, the Aviation Policy Framework provides some guidance on what should be included as part of master plans that may be employed in supporting prospective planning applications. It anticipates that the impact on people and the natural environment; and proposals to minimise and mitigate impacts would be addressed as two ‘core’ areas in a master plan, the remaining issues to be addressed being forecasts, infrastructure proposals and safeguarding and land/property take. Safety impacts are not identified explicitly but are evidently included as part of the broad category of the impact on people.

- 2.9 Overall, the Aviation Policy Framework lacks any specific detail concerning the manner in which safety impacts associated with airport development should be addressed and, accordingly, there is nothing in it which would affect the approach previously adopted by Rushmoor Borough Council in relation to the draft FAAAP.

2.2 RISK ASSESSMENT METHODOLOGY CHANGES

- 2.10 No fundamental changes to the risk assessment methodology employed for determination of PSZs since 2009 have been identified. The latest publicly available information in this respect is the consultation document for the establishment of a PSZ at Blackpool Airport. This consultation document, dated 5 September 2013, identifies the methodology described in the 1997 report on “Third Party Risks Near Airports and Public Safety Zone Policy” (the 1997 Report)¹ as being employed at that time and this is the methodology that supported the 2009 Report. Some minor changes concerning some of the modelling parameters are understood to have been made, for example, updates to the crash locations model and assumed aircraft crash frequencies that take account of more recent accident data. However, these changes are not fundamental and do not significantly affect the risk predictions.

- 2.11 More widely, no significant developments in aviation-related risk modelling that might lead to any changes being made in the future have been identified. It is difficult to envisage a fundamentally different approach becoming available in the near future. There is no obvious alternative to an empirical model based on the three key parameters of the DfT model, crash frequency, crash location and crash consequence. Whilst some slightly different approaches might be taken to incorporate the available empirical data into a model, it is considered unlikely that this would substantially alter the

¹ Third Party Risks Near Airports and Public Safety Zone Policy, A Report for the Department by Consultants, Department for Environment, Transport and the Regions, 1997

overall conclusions reached in respect of the significance of the risk associated with operations at Farnborough Airport.

2.3 COST-BENEFIT ANALYSIS CONSIDERATIONS

2.12 The general underlying assumptions regarding the use of cost benefit analysis (CBA) in the 2009 Report are as follows:

- That it is a valid approach in the context of UK Health & Safety legislation;
- That it is applicable to the planning decision making process in respect of risks to the public from aircraft crash.

2.13 The assumptions regarding the scale and nature of operations at Farnborough Airport employed in the 2009 Report are consistent with current and anticipated future operations and therefore are readily confirmed to be valid. However, there is a further more specific assumption regarding the value of prevention of a fatality that has been employed in applying cost-benefit analysis that will require validation.

2.14 At the time of writing the UK Health & Safety Executive provides guidance² on its web-site on the use of CBA to support safety management decision-making.

2.15 In accordance with the comments made earlier in Section 2.2 in relation to risk assessment methodology, the DfT continues to employ the approach to risk appraisal outlined in the 1997 Report which includes the application of CBA to the determination of the balance between the costs of foregoing development and the benefits of preventing fatalities in the context of the control of new development near existing runways.

2.16 More widely, UK Government guidance designed to help policy makers address certain risks to the public³ advocates the use of CBA, stating that once options for addressing risk have been identified, “they should be assessed by estimating their costs and benefits, and/or by their cost effectiveness.”

2.17 The approach adopted in the 2009 Report is consistent with that outlined in the above guidance which remains current at the time of writing.

2.18 Whilst no specific guidance is available on the use of CBA in the evaluation of airport development near existing housing and other development, the planning process overall evidently involves making balances, involving costs and benefits. CBA has previously been employed in planning considerations and is considered to be an appropriate tool where it can reasonably be applied.

2.19 As regards the value of preventing a fatality, we identify no up-to-date published figure. The 2009 report identified a value of £1,250,000 in 2009 monetary terms, based on the value of the £744,000 identified in the 1997 report, adjusted for inflation up to 2009. Further updating may therefore be appropriate to take account of subsequent changes and it may also be worth considering values from other sources that might be applicable. For example, HSE guidance¹ gives a value of £1,336,800 in 2003 monetary terms.

² <http://www.hse.gov.uk/risk/theory/alarpcba.htm> - see also Reducing risks, protecting people, HSE's decision-making process, HSE 2001

³ <https://www.gov.uk/government/publications/green-book-supplementary-guidance-risk> Managing risks to the public: appraisal guidance, HM Treasury, June 2005

- 2.20 Making reference to currently available retail price index (RPI) and consumer price index (CPI) figures from the Office of National Statistics, it would appear that the indexing assumptions made in the 2009 Report may have erred on the side of caution and overstated price inflation over the period 1997 to 2009. Based on the currently available ONS figures, a revised 2009 monetary value of £1,050,000 has been estimated. The RPI and CPI increases have been checked against average earnings over the relevant period and have been found to be comparable. By reference to CPI and RPI increases since 1997, the value of £744,000 is now estimated to be worth around £1,200,000, slightly below the value previously assumed to apply in 2009.
- 2.21 If the HSE value of £1,336,800 in 2003 monetary terms is taken as the reference, a current value of £1,841,850 is determined based on a 38% increase in the period 2003 to 2013 determined using the ONS data. This value is around 50% higher than that assumed in the 2009 Report. If this value were to be employed, the annual safety detriment of operations at Farnborough Airport would be £78,000, as compared with the value of £52,000 per annum identified in the 2009 Report. This increased value is not expected to give rise to a fundamental change in the balance between the safety detriment and economic benefit associated with airport operations.
- 2.22 On that basis it is concluded that the underlying assumptions regarding cost benefit analysis employed in the 2009 Report, including the general approach, its application to airport-related planning policy and the specific value for the prevention of a fatality are still sound.

2.4 IMPLICATIONS OF WEIGHT RESTRICTIONS

- 2.23 Aircraft weight is a relevant consideration in the context of the planning permission for operations at Farnborough Airport due to its consequential effect on noise and safety. Larger aircraft give rise to greater noise and risk impacts per movement than smaller aircraft. The following condition has been applied to both the previous and current planning permissions for operation at Farnborough Airport:
- “With the exception of up to 1,500 movements per annum by aircraft not exceeding 80,000 Kg maximum take-off weight, no aircraft exceeding 50,000 Kg maximum take-off weight and no helicopters exceeding 10,000 Kg maximum take-off weight shall take-off or land at the Aerodrome pursuant to this permission”.*
- 2.24 The 2009 Report considered the practical implications of this planning condition by reference to data for the weights of different aircraft which made up the fleet mix associated with the planning permission for business aviation that operated over the period from 2004 to 2007. An extended data set is now available and is presented in Table 1. These data show that there were between 317 and 585 movements of fixed wing aircraft in the 50,000 to 80,000 kg weight category over the period 2003 to 2012, comprising between 1.46% and 2.77% of the total number of permitted business aviation fixed-wing aircraft operations of between around 15,500 and 25,000 per annum. The lowest percentage of aircraft in that weight category (1.46%) was reported in 2011 and the highest percentage (2.77%) was reported in 2004. The average over the period was 2.09% and the data show a slightly lower proportion of aircraft in the 50,000 to 80,000 kg weight category in the latter half of this operating period. Overall, there is no evidence of any statistically significant increase or decrease in the numbers of operations of the aircraft within the 50,000 to 80,000 kg weight category over this ten year period.

Table 1: Business Movements within the 50-80 Tonne Category

Year	Business Movements ¹		Business Subtotal	50-80 Tonne		Total ²
	Fixed-wing	Helicopter		Number	% Total	
2003	15469	718	16187	361	2.33%	17301
2004	16166	1011	17177	448	2.77%	19482
2005	17549	920	18469	399	2.27%	20313
2006	20179	1186	21365	317	1.57%	25083
2007	25101	1406	26507	398	1.59%	29212
2008	24227	1277	25504	475	1.96%	27823
2009	21827	952	22779	500	2.29%	24262
2010	22549	962	23511	585	2.59%	25835
2011	22017	960	22977	322	1.46%	25027
2012	21987	1030	23017	531	2.42%	25821

Note 1: Business Movements refer to those movements associated with the planning permission for business operations.

Note 2: This total includes movements referred to as Other Aviation Activity (OAA) in the planning Deed and includes flying at and associated with the Airshow, flying by the DERA flying club, military operations, diplomatic flights.

2.25 The 2009 Report concluded that the annual movement limit of 1,500 on aircraft in the 50 to 80 tonne category was currently having no real impact on the operational fleet mix or on safety since the demand for operations within that category is significantly below that limit. It further concluded that, provided that the current business aviation model continues to be followed by the airport operator, it would appear that this situation is likely to continue. The data set now available for the longer period from 2003 up to 2012 are consistent with that picture. With an increase in the total number of business aviation movements permitted to 50,000 per annum, provided that there were to be no significant increase in the proportion of aircraft within the 50-80 tonne category in future those conclusions would remain valid in respect of the current consent. However, there is inevitably uncertainty concerning the future development of the fleet mix and the possibility of a more substantial growth in movement numbers within the 50-80 tonne category cannot be discounted completely.

2.26 Overall, no further implications of weight restrictions at the airport are identified to arise out of the revised planning permission than those that were considered in Section 6 of the 2009 Report.

2.5 WEIGHT RESTRICTION REPLICATION IN POLICY

2.27 The dependence of both noise and safety impacts on weight will have a bearing on the importance of the replication of the weight restriction condition in policy. The comments made here relate more specifically to safety impacts. As noted above, for the current fleet mix and for its anticipated likely development in the immediate future, the weight restriction condition is unlikely to have any real impact on safety since there would appear to be no demand for operations beyond the limit of the condition. (The same conclusions are thought likely to apply equally in respect of noise.)

2.28 Nevertheless, the consequential effect of aircraft weight on noise and safety means that weight restriction is a potentially relevant planning policy consideration. Maintaining the condition provides a guarantee under the terms of the current planning permission that a certain level should not be exceeded. Whether the specific numbers of movements identified in the condition are appropriate for replication in policy is perhaps a different

matter. A broader policy that identifies weight restriction as a means of managing both noise and safety impacts might be considered more appropriate without necessarily identifying specific numbers. As a minimum, such a policy principle would appear to merit inclusion in policy. The level of detail to be included in policy will ultimately be a matter for Rushmoor Borough Council.

2.6 CONCLUSIONS ON RISK SIGNIFICANCE

2.29 When discussing the implications of an increase in movements to 50,000 per annum from the limit of 28,000 per annum in place at that time, the 2009 Report concluded at Section 7.4 that the increase in risk in the event of this increase in movement numbers should be considered to be significant but not exceptional. Elsewhere in the report, the risk associated with 28,000 movements was similarly described as non-trivial though by no means exceptional.

2.30 These judgements were made by reference to two primary quantitative criteria, the HSE criteria for the evaluation of both individual and societal risk significance which are based on the consideration^{4,5} of the risks associated with a range of other activities and the risks associated with operations at other airports.

2.31 These criteria have not changed since the original conclusions were made and there have been no developments concerning the quantification of risk and the evaluation of its significance that would in any way alter those conclusions.

2.7 VALUE OF FURTHER RISK MODELLING

2.32 Without any further specific risk modelling, a number of available risk estimates provide some insight into the likely effects associated with future growth beyond the level of movements that are currently envisaged. Risks can be expected to increase generally in proportion to any assumed increase in movement numbers with the potential for some additional increase in risk in the event that there were to be an increase in the average aircraft size. The sizes of the PSZs would increase both longitudinally and laterally and the 1 in 10,000 per annum risk zone would similarly increase in extent.

2.33 The risk information of which we are currently aware and which might provide some insight is as follows:

- The locations of the current PSZs, based on 28,000 movements per annum and a forecast fleet mix that was identified at the time the application for the original planning permission was made and which is in accordance with the weight restrictions that applied to that permission: an average aircraft weight of 24.37 tonnes was assumed and an assumed crash rate of 2.23 per million movement was applied to all aircraft types;
- The locations of the PSZs estimated for the movement limit associated with the revised permission for 50,000 movements per annum, based on a fleet mix forecast for operations up to 2027. Although this information was not made public when the revised PSZs were being developed, on the basis it is regarded by the DfT to be commercially confidential, the relevant fleet mix data have since been made available by the airport operator;

⁴ See footnote 2 on page 10 and references 2, 33 & 35 therein

⁵ Quantified risk assessment: Its input to decision making, HSE Books, 1989

- The locations of the 1 in 10,000, 1 in 100,000 and 1 in a million annual individual risk contours for 28,000, 35,000, 50,000 and 60,000 movements per annum, presented in the 2009 Report, that are based on an assumed average aircraft weight of 17.1 tonnes, consistent with operational experience between 2004 and 2007, and aircraft crash rates that are understood to be consistent with those applied when using the DfT model to determine PSZs.
- Societal risk estimates for 28,000 and 50,000 movements per annum, presented in the 2009 Report, based on the aircraft weight and crash rates employed for determining individual risk estimates presented in the 2009 Report.

2.34 Further quantitative modelling of defined scenarios should enable the locations of potential future risk contours to be identified but these will be subject to some uncertainty, given the difficulties in forecasting future levels of aircraft activity and the potential for revisions in the details of the risk model.

2.35 The key question to be addressed in determining the value of undertaking any additional risk modelling in the shorter term will be whether or not it would provide some sufficient additional insight that might better inform planning decision-making than the information that is already available. For example, might it provide for improved safeguarding in respect of future expansion of the airport and avoid a future conflict between airport expansion and other development in its vicinity? National policy provides for the remodelling of individual risk contours around airports at intervals of about seven years, based on forecasts about the numbers and types of aircraft movements fifteen years ahead. That level of safeguarding for the future (i.e. fifteen years in advance and based on current planning permissions) is evidently generally considered adequate by the DfT.

2.36 In general, it would seem that the available information should already provide an effective insight into the likely impacts of future growth which can adequately guide most planning decisions. If there were to be some specific questions that the Council wished to consider that could not be adequately informed by the available information then some additional modelling might be appropriate. Otherwise, there would appear to be little if any benefit in the Council embarking on any further risk modelling. The specific circumstances under which some additional modelling might be appropriate to address a question that cannot be adequately addressed otherwise will be a matter for the Council to consider.

2.8 PLANNING APPEAL INSPECTOR'S STATEMENT

2.37 The PSZ associated with the original permission for 28,000 movements per annum was determined using an assumed historical business jet aircraft crash rate for all fixed wing aircraft operations. For the more recent permission for 50,000 movements per annum the PSZ was determined using a lower crash rate for some aircraft, notably Boeing Business Jet (BBJ) aircraft and the equivalent Airbus jet aircraft. This change in modelling assumption was considered to be appropriate in the light of experience at Farnborough Airport since it began operation as a licenced civil airport. It means that the total area of the revised PSZ associated with 50,000 movements per annum is marginally smaller than that estimated for the previous permission for 28,000 movements per annum. The overall risk levels predicted for the more recent permission for 50,000 movements per annum would therefore appear to be marginally lower than those predicted previously for the original permission for 28,000 movements per annum. Risk contours for the 28,000 movements per annum case, using the same aircraft crash rate assumptions as employed for determining the PSZ for the 50,000 movement per annum case, were presented at the appeal inquiry into the application for an increase in

movements. On a like-for-like basis, the PSZ for the 28,000 per annum movement case was estimated to be about two thirds the area of that for the 50,000 movement per annum case: i.e. the increase in movements under the revised consent has led to a 50% increase in the size of the PSZ.

2.38 Against the above background, the inspector at the appeal inquiry stated, in his overall conclusions on safety matters, that the fact that permission already existed for operations anticipated to result in a larger PSZ is strongly indicative that a greater level of third party risk has already been deemed acceptable. The Council seeks an assessment of this statement in light of the current permission.

2.39 This seems to be an entirely logical interpretation of matters and it is not surprising that the inspector may have considered this precedent to provide useful support for his overall appeal decision. However, significant weight should not necessarily be placed on this precedent alone. Weight would be better placed primarily on an objective assessment of the most up-to-date risk information against which the validity of the precedent can be evaluated. It would appear from a wider reading of the inspector's report that there is somewhat more behind his overall conclusions.

2.40 Key points concerning risk that underpin the inspector's decision may be summarised as follows:

- Risks were characterised primarily in terms of risk contours, as defined in the context of PSZ policy,
- When assessed on a like-for-like basis using the same modelling assumptions in respect of aircraft crash rates, the number of residential and commercial developments falling within the PSZ would more than double from 174 for 28,000 movements per annum to 372 for 50,000 movements per annum;
- The inspector considered that the number of developments contained within the PSZs can be taken as a rough proxy for the quantum of third party risk associated with operations;
- The inspector noted the conclusions in the 2009 Report that the risks were considered to be significant but not exceptional when compared with risks encountered at other airports or with other risks that arise from a range of hazards accepted in society in return for their benefits.

2.41 These factors, as well as the precedent in respect of the PSZ, were evidently taken into account by the inspector when weighing risk in the balance with other material considerations and reaching his overall conclusion to allow the appeal. Irrespective of the PSZ precedent, it would seem that the inspector would have reached the same conclusion, whether or not the additional comfort had been there to be taken.

2.9 CORE STRATEGY POLICY SP6 CRITERIA C AND D

2.42 Policy SP6 of the Core Strategy relates to the planning permission for business aviation movements at Farnborough Airport under which permission has been granted for up to a maximum of 50,000 annual Air Traffic Movements, of which no more than 8,900 are at weekends and Bank Holidays. Policy states that proposals to change the pattern, nature or number of movements will be permitted only where some specific criteria are met. The criteria include criteria c and d that relate to safety and are as follows:

c. That the 1:10,000 per annum annual risk contour at either end of runway 06/24 does not extend to areas where people live, work or congregate, or beyond the area at the eastern end of the runway where saved Policy FA1 of the Rushmoor Local Plan Review, 1996 - 2011, (or its successor in the Farnborough Airport Area Action Plan) applies.

d. That the consequences of any change does not change the maximum extent of the 1:100,000 per annum annual risk contour.

Rushmoor Borough Council seeks comment on these criteria as a basis for addressing the safety implications of any proposals to change the pattern, nature or number of movements over the plan period to 2027.

2.43 In this context, it should be noted that criteria c and d reflect Conditions 12 and 13 attached to the current planning permission which are as follows:

12 No flying pursuant to this permission shall take place if the 1:10,000 per annum risk contour at either end of runway 06/24 extends to areas where people live, work or congregate, or beyond the area at the eastern end of the runway where Policy FA1 of the Rushmoor Local Plan (1996-2011) Review applies.

13 All flying pursuant to this permission shall conform to the agreed 1:100,000 per annum risk contour. For the avoidance of doubt, the currently approved plans are: GN TG A OP 1582 rev A; GN TG A OP 1583 rev A; and GN TG A OP 1588 rev A.

2.44 Historically, these conditions arise from recommendations made by the Inspector of the Rushmoor Local Plan Review, 1996 – 2011. They place a potential constraint on operations that limits safety impacts, in addition to those associated with restriction on movement numbers and aircraft weight. In principle, without these conditions, operations might take place within the identified constraints that relate to numbers and weights that could lead to risk levels higher than those put forward at the public inquiry into the variation of Condition 8 which limits movement numbers. This is because the agreed contour was based on a fleet mix assumption for aircraft weights lower than the maximum permitted under the permission. This fleet mix, upon which the agreed contour is based, is understood to lead to risk estimates that comply with Condition 12, as identified above. Without Conditions 12 and 13, it would be possible in principle for operations to take place with a larger average weight than is currently being proposed. Within the current constraint on movement numbers, operation with a higher average weight could lead to risks that are higher than those that meet Conditions 12 and 13.

2.45 Against that background, Condition 12 and criterion c are important controls in that they limit the extent of the 1:10,000 per annum risk contour and prevent it from encroaching on areas where that would introduce a potential conflict with existing land uses. If Condition 12 and criteria c were not to be applied, risks could increase to the point where PSZ policy could require clearance of existing development.

2.46 Condition 13 and criterion d place objective based controls on the risks to which areas of existing development are exposed. They limit risks to a level which, in accordance with the appeal inquiry Inspector's recommendation and the Secretary of State's decision, were deemed to be acceptable within the overall planning balance. Notwithstanding the possibility that a higher level of risk might, in some circumstances, be considered acceptable, adoption of a policy that limits risk at a level which the planning process has formally found to be acceptable would seem to be an appropriate policy approach.

2.47 On the basis of the above observations, it is concluded that criteria c and d, which are consistent with Conditions 12 and 13, are appropriate policy approaches to the management of risk associated with business aviation operations at Farnborough

Airport.

3 Conclusions

- 3.1 Having regard to the considerations outlined in the previous section, the overall conclusion reached by this review is that there have been no changes to the context within which the 2009 Report was prepared, associated in particular with the Planning Policy Framework, the Aviation Policy Framework or the granting of planning permission for an increase in movements at Farnborough Airport, that would change any of the conclusions presented in the 2009 Report. The positions in relation to each of the specific points raised by Rushmoor Borough Council are summarized below.
- 3.2 Nothing new within the Aviation Policy Framework or National Planning Policy Framework is identified that would significantly alter the views set out within Section 3.3 of the 2009 Report regarding the policy context. The National Planning Policy Framework is underpinned by a “presumption in favour of sustainable development” which is consistent with the general presumption in favour of development identified in the statute which sets the planning context in place both now and at the time of the 2009 Report. The Framework requires that Local Plans should meet objectively assessed needs unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits. This balancing process would therefore appear to be essentially the same as that which has previously been adopted in planning. The Aviation Policy Framework confirms the continued use of PSZ policy as a measure for managing safety in the vicinity of airports. It identifies the impact on people and the natural environment; and proposals to minimise and mitigate impacts as two ‘core’ areas to be addressed in a master plan for airport development. Safety impacts are not identified explicitly but are evidently included as part of the broad category of the impact on people. The approach in the 2009 Report is consistent with the Aviation Policy Framework in these respects.
- 3.3 No fundamental changes in risk assessment methodology that would significantly alter the approach taken in the 2009 Report have been identified. Risk estimates that underpin PSZ policy continue to be produced using an empirical model based on historical accident data. Whilst some of the details of this model may be refined over time, as more historical data becomes available, it is difficult to envisage a fundamentally different approach to risk assessment being viable.
- 3.4 The underlying assumptions regarding the cost-benefit analysis are considered to be still sound. Whilst cost-benefit analysis is not explicitly required to be employed to support planning decisions, current UK Government guidance recognises that policy makers need to address certain risks to the public and advocates the use of CBA, stating that once options for addressing risk have been identified, “they should be assessed by estimating their costs and benefits, and/or by their cost effectiveness.” The UK Health & Safety Executive provides guidance on the use of CBA to support safety management decision-making. The analysis presented in the 2009 Report is consistent with this guidance and, on that basis, the general approach that is adopted is regarded to be sound. The specific assumptions regarding the scale and nature of operations at Farnborough Airport employed in the 2009 Report are consistent with current and anticipated future operations and therefore are confirmed to be valid. Consideration of the assumption regarding the value of prevention of a fatality that has been employed shows that revision of this figure to take account of price inflation would not fundamentally alter the nature of the cost-benefit balance.
- 3.5 The increased total number of movements under the revised planning permission of 50,000 movements is subject to the same weight restriction condition of 1,500 movements per annum for aircraft in the 50-80 tonne category as the previous

permission for 28,000 movements. The implications of these weight restrictions at the airport, as considered in Section 6 of the 2009 Report, are not altered in any way by the nature of the changes. The 2009 Report concluded that the annual movement limit of 1,500 on aircraft in the 50 to 80 tonne category was currently having no real impact on the operational fleet mix or on safety since the demand for operations within that category is significantly below that limit. It further concluded that, provided that the current business aviation model continues to be followed by the airport operator, it would appear that this situation is likely to continue. With an increase in the total number of movements permitted to 50,000 per annum, provided that there were to be no significant increase in the proportion of aircraft within the 50-80 tonne category in future those conclusions would remain valid in respect of the current permission.

- 3.6 The significance of this condition arises from the dependence of both noise and safety impacts on weight. Maintaining the condition provides a guarantee under the terms of the current planning permission that a certain level should not be exceeded. Whether the specific numbers of movements identified in the condition are appropriate for replication in policy is perhaps a different matter. A broader policy that identifies weight restriction as a means of managing both noise and safety impacts might be considered more appropriate without necessarily identifying specific numbers. As a minimum, such a policy principle would appear to merit inclusion in policy.
- 3.7 When discussing the implications of an increase in movements to 50,000 per annum, it is reported in Section 7.4 of the 2009 Report that the safety impacts associated with the increase in risk would be significant but not exceptional. These judgements were made by reference to HSE guidance on the evaluation of risk significance which are based on the consideration of the risks associated with a range of other activities and the risks associated with operations at other airports. These criteria have not changed since the original conclusions were made and there have been no developments concerning the quantification of risk and the evaluation of its significance that would in any way alter those conclusions. It is therefore confirmed that those conclusions remain valid.
- 3.8 Further modelling for future growth forecasts using the current model and modelling assumptions might be of value if it were to provide answers to questions that cannot readily be addressed by reference to the findings of previous studies that are already available as guidance. A range of risk information is already available, including PSZs for 28,000 and 50,000 movements per annum, based on slightly different modelling assumptions, 1 in 10,000, 1 in 100,000 and 1 in a million annual individual risk contours for 28,000, 35,000, 50,000 and 60,000 movements per annum, as presented in the 2009 Report and societal risk estimates for 28,000 and 50,000 movements per annum, also presented in the 2009 Report. It would seem that this information should already provide an effective insight into the likely impacts of future growth which can adequately guide most planning decisions. There would appear to be little if any benefit in the Council embarking on any further risk modelling unless there were some specific questions that could not be adequately informed by this available information.
- 3.9 In his summing up of safety matters, the 2010 Planning Appeal Inspector stated that the fact that permission already existed for operations anticipated to result in a larger PSZ is strongly indicative that a greater level of third party risk has already been deemed acceptable. This seems to be an entirely logical interpretation of matters and it is not surprising that the inspector may have considered this precedent to provide useful support for his overall appeal decision. However, significant weight should not necessarily be placed on this precedent alone without confirming its validity. Weight would be better placed primarily on an objective assessment of the most up-to-date risk information against which the validity of the precedent can be evaluated. It is evident from a wider reading of the inspector's report that there is somewhat more behind his

overall conclusions which drew on the following observations:

- The number of developments contained within the PSZs can be taken as a rough proxy for the quantum of third party risk associated with operations. When assessed on a like-for-like basis using the same modelling assumptions in respect of aircraft crash rates, the number of residential and commercial developments falling within the PSZ would more than double from 174 for 28,000 movements per annum to 372 for 50,000 movements per annum.
- As concluded in the 2009 Report, the risks could be considered to be significant but not exceptional when compared with risks encountered at other airports or with other risks that arise from a range of hazards accepted in society in return for their benefits.

Thus the inspector properly recognised that a real increase in risk was to be expected from the increase in movements but accepted that risk when weighed in the balance with other factors.

3.10 Criteria c and d of Policy SP6 of the Core Strategy essential represent objectives based elements of policy that place limits on the level of risk to which areas in the vicinity of the airport are exposed. They are consistent with Conditions 12 and 13 of the current planning permission. Criterion c limits the extent of the 1:10,000 per annum risk contour and prevents it from encroaching into areas where that could introduce a potential conflict with existing land uses and where PSZ policy could require clearance of existing development. Criterion d places objectives based controls on the risks to which areas of existing development are exposed, limiting risks to a level that was deemed to be acceptable within the overall planning balance. On that basis they are judged to be appropriate policy approaches for the management of risk associated with business aviation operations at Farnborough Airport.