Australian Airline Pilots' Association
Member of IFALPA

Suite 6.01, Level 6
243-249 Coward Street
Mascot NSW 2010

T. +61 2 8307 7777
F. +61 2 8307 7799
E. office@ausalpa.org.au

By Electronic Transmission

Our Ref: T40-00-86

30 October 2017

Lachlan Phillips
Acting General Manager – Aviation Environment Branch
Aviation and Airports Division
Department of Infrastructure and Regional Development
GPO Box 594
CANBERRA ACT 2601

Email: safeguarding@infrastructure.gov.au

Dear Lachlan,

AUSALPA COMMENTS ON THE NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK DRAFT UPDATE TO GUIDELINE B - *MANAGING THE RISK OF BUILDING GENERATED WINDSHEAR AND TURBULENCE AT AIRPORTS*

The Australian Airline Pilots' Association (AusALPA) represents more than 5,000 professional pilots within Australia on safety and technical matters and we welcome the opportunity to contribute to improvements in aviation security in Australia.

AusALPA is the Member Association for Australia and a key member of the International Federation of Airline Pilot Associations (IFALPA) which represents over 100,000 pilots in 100 countries. Our membership places a very strong expectation of rational, risk and evidence-based safety behaviour on our government agencies and processes. We regard our participation in the work of the Department of Infrastructure and Regional Development (DIRD) as essential to ensuring that our aviation and airports policy makers get the best operational safety and technical advice that is completely independent of the vested commercial interests that currently dominate Australia's aviation regulation decision-making.

Our Commitment

More than any other stakeholders, our members sample the positives and negatives of Australia's approach to airport safeguarding every day. Consequently, AusALPA is committed to the NASF and the Guidelines as well as the long-term strategy of a single broad-based national approach to safeguarding aviation infrastructure at all levels of government across Australia.

The Downside of Federalism

AusALPA is entirely sympathetic to the difficulties faced by DIRD in trying to influence the States to adopt robust safeguarding measures for our aviation infrastructure. While we understand that the States are wary of the economic consequences of various safeguarding proposals, history already tells us that failure to act decisively and at the first opportunity will not be forgiven in the aftermath of a major accident.

NASAG should be in no doubt that Guideline B is entirely about **aviation safety**.

As the only stakeholders constantly exposed to these specific environmental risks, AusALPA's greatest disappointment in the evolution of Guideline B is the apparent inability of the safety message to be heard over the economic development noise created by those decision-makers comfortably remote from the potential accident site. That disappointment stems particularly from the failure of the Civil Aviation Safety Authority to provide robust insider advice to NASAG on all safety matters, properly informed by actual operational experience.

Managing Public Risk

AusALPA recognises that a number of individuals within DIRD have contributed significantly to improving Guideline B. Clearly, CASA has also made some useful contributions, albeit not in what we might call the required safety leadership. We also recognise that the scientific research upon which Guideline B is based was severely constrained to a specific rather than general problem and that further research is a future financial battle, at least in the absence of a turbulence related aircraft accident.

However, our parallel work on the proposed Public Safety Zone guideline highlighted the concept of societal risk – the public tolerance of the risk of a mass casualty event. Hand in glove with public risk management policy goes the concept of ALARP (as low as reasonably practicable), which must be the foundation of the Guideline B.

Despite making some progress, the critical question remains: is NASAG providing a guideline that provides the best advice to assist us to reduce the risk of a mass casualty event attributable to building generated windshear and turbulence near runways at airports to ALARP?

AusALPA asserts that **it is not**.

From the outset, Guideline B, even in its proposed form, fails the fundamental risk assessment step of identifying the true extent of the operational hazards to safe aircraft operations. No person or organisation can mitigate an unidentified risk due to an unmeasured hazard. Notwithstanding the already identified basic research deficiencies, the Guideline does not accurately reflect the NLR recommended assessment area or use realistic wind data to adequately assess the hazards. We are also concerned that the stated aim of encouraging "the use of existing assessment technologies and methodologies" lacks the sort of aspiration required to achieve the best rather than cheapest outcome.

The 'Assessment Trigger Area'

Despite our consistent highlighting of the deficiencies of Guideline B, this draft is still significantly flawed. It remains incomprehensible to us that, on the one hand, NASAG accepts the need to implement all three NLR wind deficit and turbulence criteria consistent with the NLR research yet, on the other hand, steadfastly refuses to correct the still unexplained error in defining the 'assessment trigger area' around the runway ends.

NLR set the along-runway assessment length as **1500m** to ensure that the assessment covered the landing flare, touchdown and high-speed rollout of landing aircraft. The unsafe limit of only 500m initiated by SLR and perpetuated in Guideline B has no scientific basis, remains unexplained even by its author and has no credible proponents – yet that error ensures that the safety assessment ceases at the point where most aircraft are still extremely vulnerable to the aerodynamic effects of building generated windshear and turbulence.

Notwithstanding that the real world operational advice of the majority of Australia's commercial pilots provided through AusALPA is indefensibly being ignored, the real tragedy appears to be that the unsafe 500m limit is retained in the Guideline simply because CASA, in a complete abrogation of its aviation safety responsibilities, has failed to advocate for its correction!

By any measure, this is an unacceptable outcome. All references throughout the Guideline must be immediately corrected to reflect 1500m as the required distance.

The Applicable Wind Data

AusALPA has consistently highlighted the inadequacy of relying on Bureau of Meteorology (BoM) wind rose data for Guideline B assessments. Nonetheless, that is the recommended data source retained in the revised Guideline - presumably also as a consequence of a lack of safety advice from within Government.

The BoM webpage on wind roses says:

> Across Australia, wind speed and wind direction measurements are made at various times of the day. Historically, these measurements tended to occur at 9am and 3pm, although some locations (mostly sites within cities and at airports) had more extensive observation programs. More recently, the introduction of Australia's Automatic Weather Station (AWS) network has allowed the frequency of observations to increase, in many cases to eight or more observations per day.

Clearly, that simplistic wind data is completely inadequate for calculating critical wind frequency, as we brought to the Minister's attention in the case of the 9 Molonglo Drive MDP process. Even in that case, much better data was available at quite small cost, but was not used because it was not 'required'.

But even BoM's more extensive datasets can be problematic.

For example, BoM's *Western Sydney Airport Climatological Review* published on 15 April 2015 includes quite telling information in Chapter 2 *Wind* that illustrates the significant limitations of even the latest data collections. The wind data used is described as:

> Wind data used for the following analyses (with the exception of the averages and extremes discussed in section 2.1) are observations taken at Badgerys Creek at 10 minute intervals. Wind speed is the average wind speed in the last 10 minutes, wind direction is the average direction of the wind in the last 10 minutes, and gust is the highest maximum 3 second gust in the last 10 minutes. The direction associated with the wind gust is the average wind direction in the last 10 minutes. It should be noted that this is not necessarily the direction from which the gust came.

Section 2.1 of that Review goes on to say:

> Mean wind speeds at Badgerys Creek are relatively consistent throughout the year, ranging from **5** to **7** knots, with a slight increase in the mean wind speed from July through to February (See Table 2-1). The strongest wind gust ever recorded at the site was **56** knots on 24 September 2006, from a north-northwest direction. Wind gusts of **35** knots or higher have been recorded during every month of the year, generally ranging in direction from north-northwest through to south-southwest (See Table 2-1).

While these extremes are actually rare, they highlight the lack of operationally relevant wind characteristics in seasonal or even monthly mean wind rose data, particularly when displayed only within 45º sectors. Our February 2016 submission to the Minister included an analysis by a prominent wind engineer that asserted that:

> "Any criteria based on 1 min or 10 min mean wind speeds would be hopelessly inadequate and would completely miss the physics of how wind gusts effect aircraft…"

and

> "The gust wind speeds that are important are those lasting in the order of 10 seconds at the most…".

AusALPA is of the view that the Guideline should refer to the use of "the most operationally relevant wind data available for the location" rather than a legacy product that serves no useful purpose in this specific application.

Assessment Methodologies

AusALPA has consistently expressed our concerns about the accuracy and scope of the assessment methodologies of recent studies.

We consider previous desk top studies to be problematic for anything other than the simplest of isolated developments. We accept the potential of CFD, but also note that it is clearly an evolving science and not without some controversy among competing models; however its cost tends to limit its use. Wind tunnel modelling appears to us to offer the most cost-effective assessment tool, at least for the more common developments

Nonetheless, AusALPA maintains the view that the determinative value of wind tunnel modelling can be severely limited by the scale and accuracy of the building models, the type of sensors used and the choice of sampling points.

As we noted in our advice to the Minister in regard to the 9 Molonglo Drive MDP, choice of model scale can be used to exclude significant existing sources of turbulence and windshear and therefore potential interactions, both good and bad. We also noted the significant limitations of the commonly used single axis hot wire probes, despite the availability of multi-axis probes such as Cobra probes that are far better suited to assessments of complex flows. While we welcome both the CASA suggestion for multiple data sampling points and the NASAG acceptance of the need to determine threshold wind speed and direction, we again note that they are limited to the runway centreline rather than the operational airspace volume within which aircraft operate generally and not just for the landing case.

AusALPA has unresolved concerns about peer review and quality assurance of assessments that the Guideline fails to address. We accept that these are difficult areas, but NASAG needs to grasp the nettle rather than conveniently ignore the issue.

Pilot Involvement

Pilots of public transport aircraft (and Australian Defence Force (ADF) pilots in peacetime) are required to be risk-averse and have a duty of care to protect their passengers. They will provide appropriate buffers on their aircraft capabilities and their personal skill sets to cater for unknown environmental influences beyond their control. However, pilots are part of a much more complex system of responsibility and regulation. In particular, governments of all persuasions have a duty to the travelling public to ensure that developments on or in the immediate vicinity of airports do not create avoidable or unknown environmental influences that may compromise those buffers to the extent that the safety of the aircraft is threatened.

It is very clear to us that CASA and DIRD have thus far proved, in the absence of pilot involvement, to have insufficient operational insight or regulatory control over airport

developments to satisfy that duty of care. Therefore, while we welcome the inclusion of paragraphs 28 and 29 of the new Guideline, we believe that our role extends to providing appropriate operational advice to relevant Government agencies as well.

AusALPA's involvement with the development approval process (as distinct from this policy development process) has been discouraging at best. Critical information flows freely between certain parts of DIRD and the development proponents, but pilot stakeholders are actively excluded. This closed door approach creates an atmosphere of collusion rather than transparency in the application of public policy. The most common explanation is that "the Act does not require it" – an egregious response, particularly where safety is clearly involved.

Separately, it is important to note that airlines do not necessarily represent the views or the operational knowledge of their pilots. While we often share common ground on operational matters, airlines (with few exceptions) remain commercial enterprises with financial viability and profit-making as their highest priority – safety is managed as a critical risk to achieving that priority. As stakeholders in the aviation system, airlines and pilot associations are separate entities and need to be considered by both government and developers as such.

Policy Review Cycle

Guideline B is not a 'set and forget' policy document. The available science is relatively sparse and there are clearly gaps that need to be filled. For the most part, the relevant research tends to be reactive to particular issues rather than broadly based. However, the applicable research areas will require active monitoring and AusALPA believes that NASAG should adopt a monitoring and formal review process over a five year cycle

Editorial Issues

Off-airport Buildings

AusALPA would like to understand the basis upon which CASA advised DIRD/NASAG that "the risk of wind effects from buildings located off-airport should not be overstated". We would consider a worse case to be that any such wind effects are understated, since those effects are a consequence of location relative to the runway and regardless of where the airport boundary may fall.

Existing Buildings

While noting the content of paragraph 9, AusALPA believes that an additional duty should be recognised. If an existing building is suspected of generating windshear and/or turbulence in the vicinity of a runway or Helicopter Landing Site (HLS), the entity responsible for the building and the airport operator each have a duty of care to fully understand the potential impacts to flying safety, and if required, proactively risk manage the operational impacts.

Windshear and Turbulence Criteria

The frame of reference for windshear assessment is aligned with the runway. Consequently, the terms used in paragraph 49 would more accurately be "along-runway" and "across-runway", although the operational preference would be for "head wind shear" and "cross wind shear" as terms most relevant and familiar to pilots and ATC.

Figure 1 of the Attachment

As we have previously identified, Figure 1 needs to be redrawn – the negative impact of its visual quality overshadows much of the other good work.

Is NASAG Showing Leadership?

While we note the politics of Commonwealth/State cooperation attendant upon land use issues and we recognise the difficulties in even getting this far, AusALPA is strongly of the view that the NASAG needs to free itself of excessive dependence on past decisions, particularly where safety is concerned.

There needs to be both acceptance of the history of poor safeguarding decisions and recognition that NASAG is not bound by those mistakes. We need to move forward by ensuring that we take positive steps to properly identify the hazards to ensure that we can reduce the readily foreseeable risks to ALARP.

Unfortunately, the proposed revision fails to achieve its stated goal "to ensure that NASF Guideline B reflects current world's best practice and available science…" for the reasons we have outlined above. This is a failure of leadership at many levels and must be corrected.

We previously advised that in many unanticipated ways, we feel that NASAG appears to be retreating rather than advancing and that NASAG has wasted a great opportunity by applying short-sighted and excessively conservative constraints on the review process. That advice remains unchanged.

World's Best Practice

One of the great ironies of this review process was that "…the aim was not to re-define world's best practice". As we said in our comments on the proposed Public Safety Zone guideline, "world's best practice" is most often a function of popularity rather than absolute quality. This is particularly so in the relatively barren landscape of safeguarding policy, where, whether NASAG likes it or not, Guideline B will most likely be considered in other land use management jurisdictions as "world's best practice".

If nothing else, that prospect should compel us to get it right.

Conclusions

AusALPA applauds the improvements made in this revision and recognises the hard work and commitment of the relevant DIRD staff members.

AusALPA deplores the fact that the 'assessment trigger area' still does not accurately reflect the 1500m along runway dimension recommended by NLR.

AusALPA is deeply disappointed that a lack of safety leadership by CASA has resulted in the retention of a woefully inadequate 'assessment trigger area'.

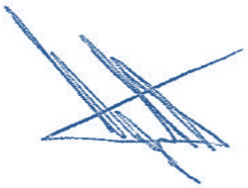
AusALPA is disappointed that the Draft Guideline continues to refer to wind rose data as suitable for assessment purposes, despite its clear inadequacies.

AusALPA remains deeply concerned that the assessment process is failing to properly identify the true hazards and thus is frustrating the ALARP risk mitigation process.

AusALPA reiterates the need for pilot involvement in both policy development and development approval processes.

AusALPA urges NASAG to abandon its apparent preference to be a mere follower and to adopt a leadership stance on safeguarding that capitalises on the substantial progress already made.

Yours sincerely,



Captain Murray Butt
President AusALPA
President AIPA

Captain David Booth
President AFAP

Tel: +61 – 2 – 8307 7777
Fax: +61 – 2 – 8307 7799

Email: office@ausalpa.org.au
government.regulatory@aipa.org.au