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By Email

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Dear Noel,

AUSALPA COMMENTS ON THE WINDTECH ASSESSMENT FOR THE POTENTIAL FOR WIND SHEAR AT MAJURA PARK, CANBERRA AIRPORT

AusALPA was pleased to receive Windtech Wind Shear Report WD761-02F03(rev0) dated 29 May 2018 under your covering letter of 30 May 2018. We are grateful for the opportunity to provide you with our comments.

It is an extensive report and we were certainly gratified to see that a number of our previous concerns have been addressed. We recognise the significant increase in data points examined and applaud the transparency that they bring to both the experimental technique and the results. AusALPA believes that the likelihood of the assessment failing to detect an operational risk must be as low as reasonably practicable and thus it is critical to establish the wake boundaries by measurement rather than presumption.

The analysis in this report, insofar as it goes, provides valuable insight into the existing environment as well as into the effects of the proposed development. Perhaps most importantly, the calculation and presentation of wind speed and direction thresholds for exceeding the windshear and turbulence criteria allows operators to provide an immediate operational insight to flight crews that they may encounter adverse conditions with an attendant flight safety risk.

Nonetheless, we believe that some gaps remain.

The Assessment Areas

As you are well aware, AusALPA continues to be strongly at odds with CASA, and consequently with DIRD and NASAG, in regards to the appropriate size of assessment areas. We continue to maintain that CASA's failure to act on the discrepancy between Guideline 'B' and the foundation NLR report upon which it purports to be based is perpetuating an unsafe outcome. Moreover, where some other developers choose

minimum compliance over proper safety analysis, we are witnessing a number of assessments that ignore obvious operational realities.

While we recognise that CAPL has gone beyond the minimum Guideline 'B' requirements for the Runway 17 (RW17) analysis and that the geography of 25 Catalina Drive in relation to RW 12 provides a practical limit to the assessment area, we believe more consideration should be given to the RW 30 case.

We have attached a diagram that shows the full NLR assessment area for landing on RW 30. It can be seen that the development at 25 Catalina Drive just falls within the 1500m along-runway area and therefore deserves some analysis, not only for the long landing scenario but also for late go-arounds and take-offs in more susceptible light aircraft. The geometry is such that the existing analysis can continue to explore wind directions beyond North into the prevailing westerly and north-westerly winds of much greater average speeds.

The Meteorological Data

As we have identified previously, our preference for windshear and turbulence assessments is for the threshold wind speeds for parameter exceedance to be identified for a range of wind directions appropriate to the particular runway being assessed, before examining the relevant meteorological data as the next step in attempting to establish the statistical likelihood of operational consequences. In this way, removing scenarios from further consideration is by assessment rather than presumption. We are pleased that the report follows that approach because it allows us to separate the physical wind tunnel results from the probability calculations that totally depend on valid meteorological datasets.

AusALPA respects that historical BoM climate data is essential to the planning considerations of developments that generate problematic wakes, particularly in regard to the probability of consequential runway closures. However, much of the publicly available data is not suitable for that purpose – for example, the 9 a.m. and 3 p.m. wind roses or 10 minute winds and 3 second gusts recorded over only the last 10 minutes of every hour. We are aware of significant changes in BoM equipment standards, record-keeping, data blocks, statistical treatment and related issues over the years that together act to make the historical data anything but homogenous. We are also aware that far more extensive datasets are available from the BoM on a cost-recovery basis.

In our view, it is disingenuous to simply say that the probability of a particular wind speed and direction is based on "an analysis of wind rose data obtained by the Bureau of Meteorology from Canberra Airport between 1939 and 2002". Similarly, the report tells us nothing about the source and validity of the "annual probability of exceedance of the hourly mean wind speed at standard anemometer conditions" shown in Figure 3.

We believe that is critical to ensure that the probability data is statistically sound and that any databases used for that purpose are peer-reviewed by appropriately qualified statisticians. The report must clearly establish that validity.

Confidence Intervals

All the results are stated without any indication of accuracy or confidence intervals. Assessing the operational implications of those results becomes quite difficult when it is far from clear whether, for example, a difference of 1 knot of wind speed is statistically significant or 'false precision' because it is less than the accuracy of the measurement.

Mitigating the Risks

While it is clear that the risks generated by 25 Catalina Drive are almost wholly limited to RW 12 and thus to a smaller group of aircraft types suited to the pavement strength and runway characteristics, there are also potential risks for similar operations to RW 30. We believe that those risks should be identified or confirmed as absent rather than just ignored.

Similarly, AusALPA cautions against presuming that pilots will "be instructed" to use certain runways – the analysis should examine all of the operational risks, particularly as there are both controlled and non-controlled activities at Canberra Airport.

Editorial Issues

There is a wealth of valuable data contained in the report and we welcome the significant improvement in operational relevance.

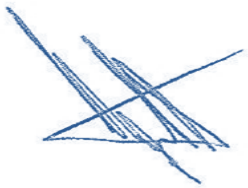
However, while there is also some valuable history in regard to the changes to the development proposal, AusALPA considers the document to be worthy of restructuring so that the core operational outcomes are not lost among data that no longer applies or parameters that have no physical or practical relevance to the lay reader. We are not proposing that the data should be dispensed with, but rather that it be reviewed for relevance and repositioned to aid clarity.

We have provided some additional editorial comments as an attachment so as not to distract from our main commentary.

Recommendation

AusALPA recommends that the effects of the development on RW 30 should be further explored for the prevailing westerly and north-westerly winds.

Yours sincerely,



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Attachments:
1. YSCB RW 30 Full NLR Assessment Area including 25 Catalina Drive
2. Editorial Comments - WD761-02F03(rev0) dated 29 May 18

Attachment 1 to
AusALPA Letter to CAPL
dated 14 June 2018

EDITORIAL COMMENTS - WD761-02F03(REV0) DATED 29 MAY 18

Executive Summary - Runway 17/35

The reported results are for the 2017 building design. A statement is made:

> This testing was conducted for 2017 design which is higher and larger overall than currently proposed 2018 design, therefore the impact of the 2018 will be less than measured and report.

That statement is not based on any discussion in the main body of the report. There is no supporting argument for that conclusion and we are not convinced that some sampling of the original data was unnecessary for the new design.

Executive Summary - Runway 12/30 – 2017 Design

Even if the body of the report examines the 2017 design to identify that the design changes achieve their intended outcomes, the results of that superseded assessment are no longer relevant.

2 WIND CLIMATE OF THE CANBERRA REGION

The statement:

> The annual probability of exceedance of the hourly mean wind speed at standard anemometer conditions (open terrain and 10m height) has been shown in Figure 3.

does not identify the source or validity of that data, particularly as it appears to form the basis of the subsequent risk analysis throughout the report.

Figure 5b

Figure 5b appears to be an image of 50km radius, rather than 5km. There may be a better way of illustrating the surrounding topography, if that is the intended purpose.

7.2 Test Results

Much of the data presented here and throughout the rest of the report is in the form of coefficients. Although the colour coding is helpful, it is not clear what value of a particular coefficient results in an adverse operational outcome. Some discussion would useful, as perhaps would be expanding the legend to the “red” value, noting that some judgement has already been made in colour-coding the coefficients and their related wind speeds. The same comment applies to the depiction of turbulence intensities.

Test point 79 is not shown, but some data is recorded in the Appendices.

Table 4 and others

“Absoulte” is cut and pasted throughout, apparently undetected by spell-checking.

Half-hourly Wind Events

Many figures show data that has been “expressed as half-hourly wind events”. Is that based on recorded data or some form of in-house manipulation of the historical record?

8 RUNWAY 12/30 BUILDING WINDSHEAR AND TURBULENCE ASSESSMENT – 2017 DESIGN

These results are for a superseded design. We have no issue with them being retained, but believe that they should be relegated to an Appendix as they are not relevant to the final design analysis.

9.3 Mean Wind Speed Deficit

This section mentions deficits, but shows the results in Figure 34 as coefficients. While experts may easily equate the two concepts, lay readers most likely will not. The relationship between the coefficients in Figure 34 and Table 22 is not clear.

APPENDIX A – RUNWAY 12/30 TABULATED RESULTS – 2017
APPENDIX B – RUNWAY 12/30 GRAPHICAL RESULTS - 2017

Do these tabulated and graphical results serve any relevant purpose for the revised design? If their only purpose is to support Section 8, perhaps the two might be combined as a separate report for reference or as a final Appendix rather than the first two.

Is there any reason for not numbering the pages of the graphs?

On the real page 96, which contrasts the cross-wind coefficient and the shear over 100m, is the shear graph displaying the “Cross-Wind Coefficient Deficit” or the “Cross-Wind Deficit Coefficient”? A similar question relates to the along-wind results on the next page.

Table C5: Winds from 270^{o} – 10-Minute Mean Wind Speeds at standard anemometer conditions (10m height, open terrain) to cause exceedance of 4kts RMS turbulence criterion (Maximum Horizontal Turbulence) at runway (kts)

Test point 79 shows an anomalous result in the Background section – we would expect that it would be of a similar value to the other points (26-29kts). A similar problem is reflected in Table C9, presumably as a result of the standard gust factoring.

APPENDIX D – RUNWAY 17/35 GRAPHICAL RESULTS - 2017

The Appendices are not in the same order as the discussion in the body of the report.

APPENDIX G – BOUNDARY LAYER PROFILES

What is the significance of the Von Karman Harris Spectral Density from ESDU 85020 (Lu = 632 m) compared to the fitted data at Lu =250 m?

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