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9173.L5

6 December 2019

The General Manager
 Regulatory, Environmental and Stakeholder Engagement Branch
 Western Sydney Unit
 Department of Infrastructure, Transport, Cities and Regional Development
 GPO Box 594, Canberra ACT 2601

Attention: Ms Sarah Leeming

Dear Ms Leeming,

Re: Meeting on 5 December with Dr Rob Bullen (Wilkinson Murray)

Firstly, let me offer my thanks for providing Don Carter and myself with the opportunity of meeting with Dr Bullen prior to his presentation to FOWSA. I would also like to specifically acknowledge the very professional work of Barrie Turner in his role as moderator. Whilst the meeting was largely beneficial, there were aspects of Dr Bullen's PowerPoint presentation with which we strongly disagreed.

In his presentation, Dr Bullen displayed a number of slides that purported to show L_{AMax} single event noise contours for arriving and departing aircraft at WSA. Dr Bullen stated that these were "average" values. It was pointed out to Dr Bullen that at Page 43 (Section 10.5.3) of the EIS stated that "...Single-event noise contours depict the maximum (L_{AMax}) noise levels resulting from a single operation of a specific aircraft type on all applicable arrival or departure flight paths..." When this page was shown to Dr Bullen, he agreed with the wording but claimed that it was not what Wilkinson Murray intended to convey. It was also pointed out that in Appendix E-1 of Report No. 14168 Version E – Acoustic Terminology, L_{AMax} was defined as "... L_{AMax} over a sample period is the maximum A-weighted noise level measured during the period. In the context of aircraft overflight noise, L_{AMax} generally means the maximum A-weighted noise level recorded during a specific overflight..."

In my Report No. 9173.R1 of March 2019, I can confirm that each L_{AMax} measurement reported was the result of a single aircraft overflight at the time, date and altitude shown in the relevant Appendix.

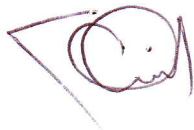
Dr Bullen then purported to show that if our L_{AMax} values (for a specific aircraft type) were averaged over the full duration of our measurements (approx. two weeks), then there was effectively no difference between these Wilkinson Murray “adjusted” noise levels and those reported in the EIS. I totally reject that approach as spurious. It should be noted that the definition of L_{AMax} shown in Appendix E-1 of Wilkinson Murray Report No. 14168 Version E – Acoustic Terminology is entirely consistent with International usage except that “Fast” response would be the International default.

The voracity of all the noise levels described in the EIS as L_{AMax} are now in questions as they were not obtained by actual single event monitoring. In addition, the INM Users Guide for Version 7.0 at Section 2.1.3 Sub-paragraph 3 advises that “...INM is not designed for single-event noise prediction, but rather for estimating long-term average noise levels using average input data...” Comparisons between our measured data and INM calculations must be considered in this context.

Dr Bullen appeared contemptuous of our suggested use of two side-by-side noise loggers set up at a more representative Australian airport of your nomination. One noise logger would be set to “Fast” time constant and the other to “Slow”. Dr Bullen was of the view that simply repeating our earlier measurements using one noise logger only set to “Slow” time constant would suffice. I disagree with this approach as the second measurement would be of a different population of arriving aircraft at potentially different altitudes.


Finally, in his Summary slide, Dr Bullen suggested that there were effectively no differences between our reported L_{AMax} values and those shown in the EIS, Presumably, this claim results from his spurious averaging. Dr Bullen also claimed that our measurements were not conducted in accordance with the Australian Standard (AS 2021). As we demonstrated at our meeting of 9 August, AS 2021 is intended to provide guidance in relation to land use planning adjacent to airports. There is currently NO Australian Standard relating to the unattended monitoring of aircraft noise in the vicinity of airports. Dr Bullen agreed to modify his summary slide to indicate that there is legitimate disagreement on the AS 2021 issue.

Yours faithfully,

A handwritten signature in dark ink, appearing to read 'E. Ancich', enclosed within a hand-drawn triangular frame.

Dr E.J. Ancich
PhD, FIEAust, CPEng, MIABSE

7/23/2020




ACOUSTICS AND AIR

Western Sydney Airport EIS:

Response to Criticism of Noise Assessment

Dr Rob Bullen

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Noise Assessment in the EIS

- Conducted by Wilkinson Murray
- Assessed noise impacts from indicative flight tracks and procedures using a number of different methodologies
- Criticism from Dr Eric Ancich has focused on predicted maximum noise levels from aircraft (L_{Amax}), claiming these are too low
- This presentation provides a response to that criticism. It is based on Dr Ancich's report 9173-R1 and additional comments in correspondence.

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Basis of the Criticism

A: Measurements

- Noise levels from operations at Sydney Airport were measured at 3 locations –
 - Mays Hill (departures)
 - Avondale Golf Course (arrivals)
 - Pymble Ladies College (arrivals)
- Claimed that measured levels are significantly higher than EIS predictions for similar locations around Western Sydney Airport.

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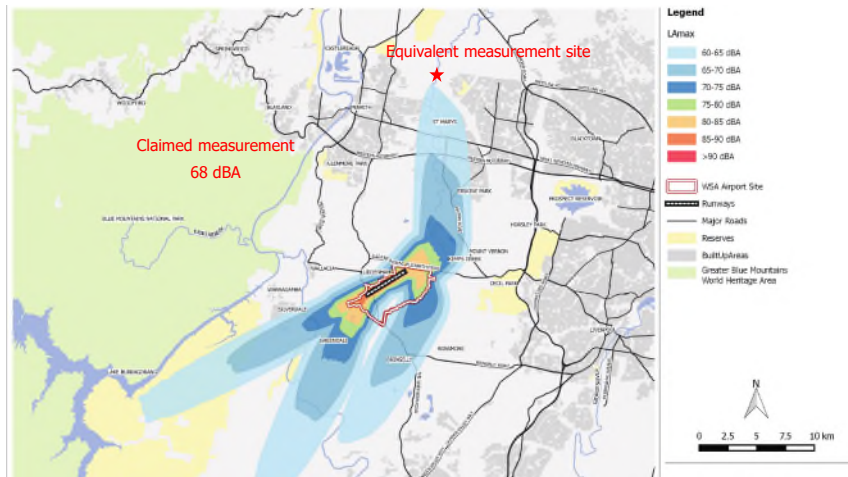
Basis of the Criticism

B: Prediction techniques (INM noise model)

- Claimed the model should not be used for “single event noise predictions”
- Claimed the model should have been “calibrated”
- Claimed variable aircraft heights should have been considered

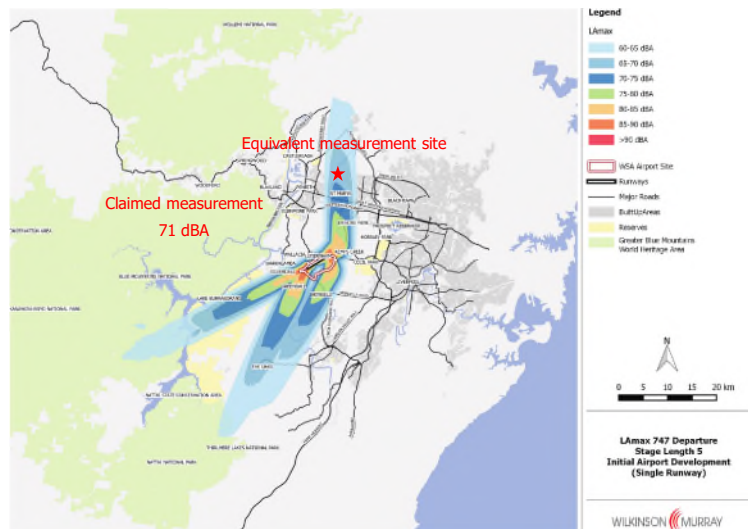
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L_{Amax} Noise Levels from A320 Take-offs – From EIS



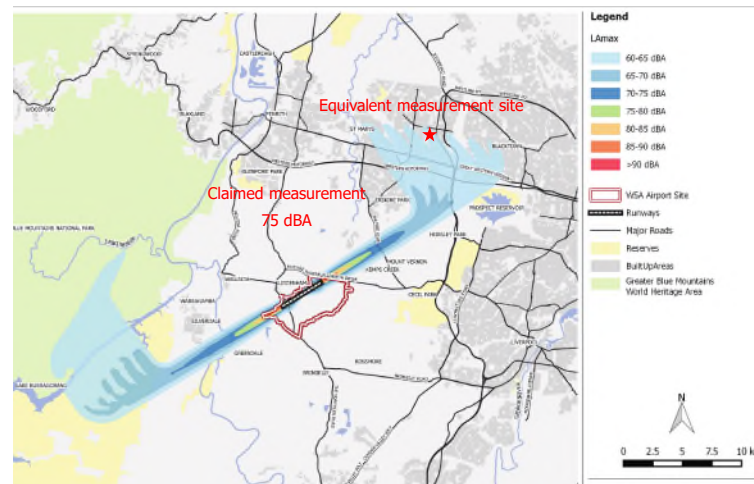
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L_{Amax} Noise Levels from 747 Take-offs – From EIS



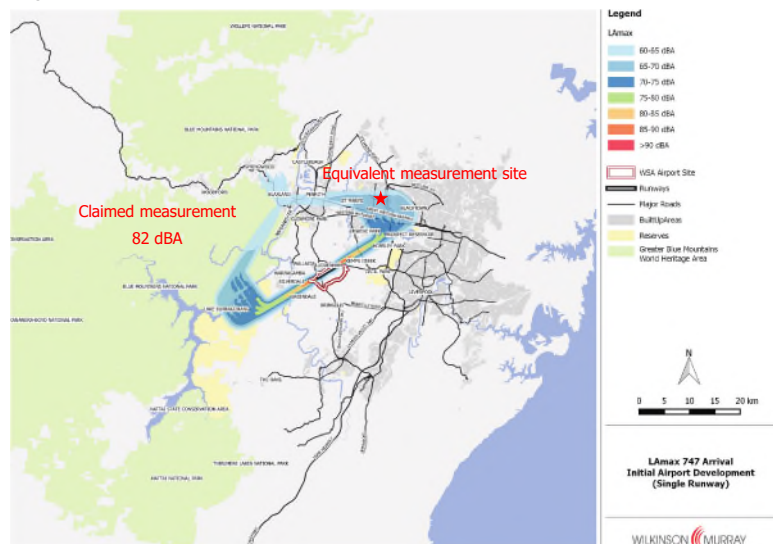
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L_{Amax} Noise Levels from A320 Landings – From EIS



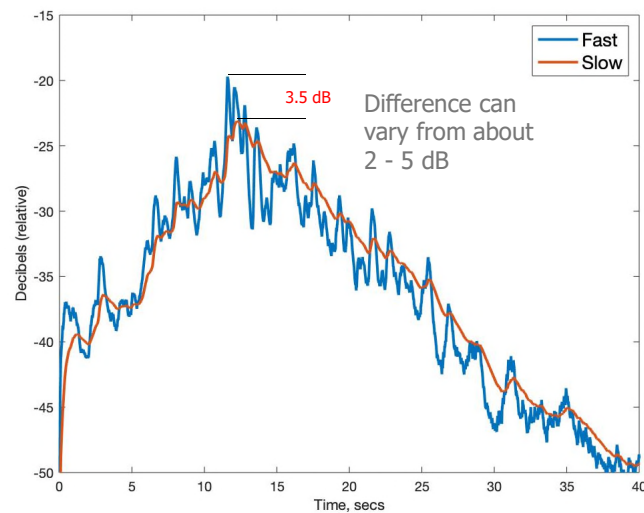
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L_{Amax} Noise Levels from 747 Landings – From EIS



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Typical Aircraft Noise Signature



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L_{Amax}

Australian Standard 2021:

Internationally aircraft noise is measured using slow (S) time-weighting ... Consistent with these practices, aircraft noise measurements and assessments in Australia use S time-weighting and an average of the maximum noise levels.

Measurements quoted in Ancich report – A320 take-offs (**Fast** speed):

Average: 63 dBA

Range: 60 – 68 dBA

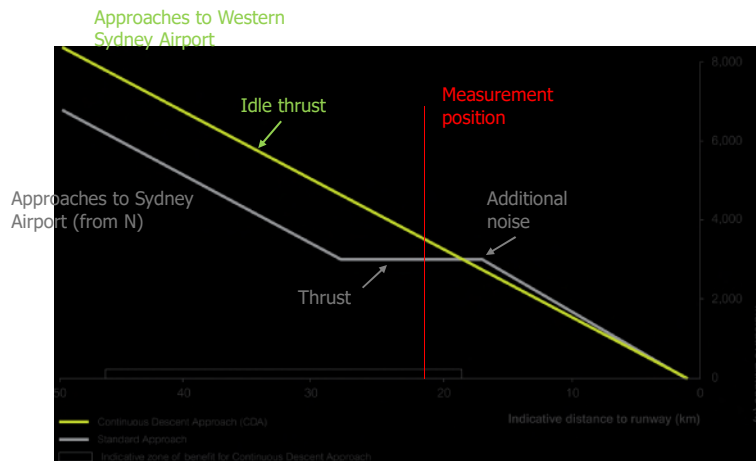
SO – L_{Amax} from A320 take-offs in St Marys:

60 dBA Average, Slow speed (as defined by Standards)

68 dBA Absolute maximum, Fast speed

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Continuous Descent Approaches (CDA)



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Noise Levels for Landings

Measurements quoted in Ancich report – A320 landings (Fast speed):

Avondale Golf Course

Average: 71 dBA
Range: 65 – 75 dBA

Pymble Ladies College

Average: 68 dBA
Range: 61 – 73 dBA

Prediction at Western Sydney Airport:

60 dBA Average, Slow speed

Effect of introducing continuous descent approaches ~ 5-8 dBA

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Noise Levels for Landings

Measurements quoted in Ancich report – 747 landings (Fast speed):

Avondale Golf Course

Average: 76 dBA
Range: 69 – 82 dBA

Pymble Ladies College

Average: 71 dBA
Range: 69 – 73 dBA

Prediction at Western Sydney Airport:

66 dBA Average, Slow speed

Effect of introducing continuous descent approaches ~ 2-7 dBA

A study after the introduction of CDA at Louisville Airport, U.S., showed a noise level reduction of 4-7 dBA.

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Criticism of Prediction Techniques

"The EIS purports to be stating L_{Amax} levels when in fact they are stating long-term average effects."

L_{Amax} is defined in relevant standards as the average of maximum noise levels from a specific aircraft type performing a specific operation.

The absolute maximum noise level ever recorded is almost impossible to predict, and not relevant for understanding overall impacts on the community.

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Criticism of Prediction Techniques

"In the case of the WSA EIS no calibration of the INM model was carried out. However, in the case of the new parallel runway at Brisbane Airport, calibration of the model was carried out for the full range of aircraft types."



(Average) maximum noise levels at a specific site vary up and down compared with predictions, due to differences in flying procedures, topography and other factors.

Variations are a few dB, and are very site-specific.

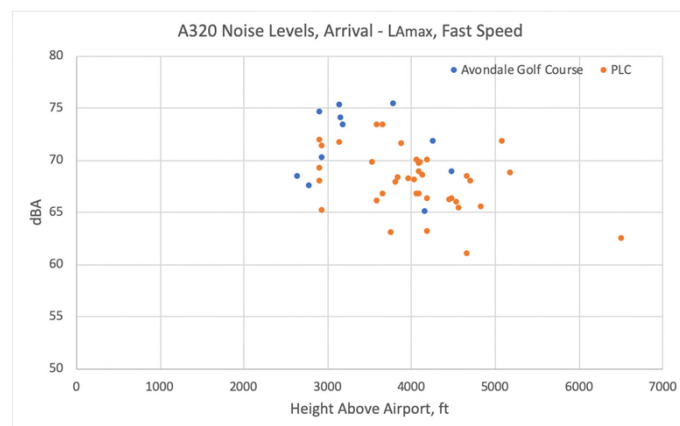
Where predictions are being made for an existing airport, WM takes "calibration" measurements to provide more accurate predictions.

Where predictions are for a new airport, "calibration" is not possible.

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Criticism of Prediction Techniques

"No account [of] variable height of aircraft arrivals and departures."

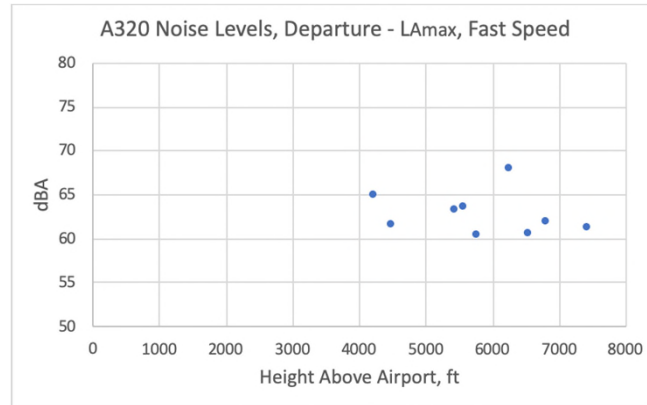


From measurements in the Ancich report (Fast speed), there is not much correlation between aircraft height and noise level for arrivals ...

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Criticism of Prediction Techniques

"No account [of] variable height of aircraft arrivals and departures."



... and even less for departures

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Summary

- For take-offs, if measurement units are defined according to standard procedures, there is no contradiction between Dr Ancich's noise measurements and EIS predictions
- For landings, differences are due to the assumption that Continuous Descent Approach will be used at Western Sydney Airport
- There is no justification for criticisms regarding "calibration" of the noise model, or the handling of aircraft heights.

NOTE:

The EIS uses "indicative" aircraft tracks; and leaves open decisions on airport operating modes and procedures such as CDA and point-merge.

These design decisions **will** have a significant impact on noise levels that will be experienced by residents.

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**Australian Government****Department of Infrastructure, Transport,
Cities and Regional Development**

Dr Eric Ancich
35 Prince Edward Street
BLACKHEATH, NSW 2785

Dear Dr Ancich

Thank you for your correspondence of 6 December 2019.

The Department of Infrastructure, Transport, Cities and Regional Development is strongly committed to the application of best practice in the preparation of environmental assessment documentation for preferred airspace and flight path designs at Western Sydney Airport (WSA).

In your correspondence you have expressed dissatisfaction with the established convention and practice of undertaking noise assessments in Australia, including reference to Australian Standard 2021. We have sought advice on the matters you have raised and have been advised that work on the 2016 EIS is well founded, and that the information presented represents industry practice.

As you are aware, a response to your criticism of the 2016 EIS noise assessment was presented to the Forum on Western Sydney Airport (FOWSA) in December by Dr Rob Bullen (as previously presented to you and Mr Carter on 5 December). FOWSA members engaged in the matters raised and understood the challenges in presenting complex acoustic information to non-technical audiences. Members were invited to consider a future presentation from yourself and Mr Carter. This was not requested by FOWSA members, and there is currently no intention to revisit this matter.

Given our considerable engagement with you and Mr Carter over the past eight months we consider these matters have been sufficiently addressed. As previously noted, there will be future opportunities for you and Mr Carter to provide your views through the public exhibition process for the airspace and flight path Environmental Assessment. We will include you on the mailing list for the consultation process.

Please be assured that communities in Western Sydney will be provided with the best available modelling and reporting to support public understanding of the flight path designs.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Sarah Leeming', with a long horizontal flourish extending to the right.

Sarah Leeming
A/g Executive Director
Western Sydney Unit

Friday, 20 December 2019