SUMMARY OF EVIDENCE OF JOHN-PAUL CLARKE

INTRODUCTION

1 My name is John-Paul Barrington Clarke of Austin, Texas, USA.

2 I prepared a statement of evidence dated 2 February in relation to the Stream 10A Airport Noise Issues of the Proposed Waimakariri District Plan (PWDP). My qualifications and experience are set out in that statement of evidence.

3 I repeat the confirmation given in that statement that I have read and agree to comply with the Code of Conduct for Expert Witnesses in the Environment Court.

4 My role in the Momentum Land and Mike Greer submissions is as an independent airport noise expert.

SUMMARY

5 In my evidence I address the following issues:

(a) Choice of limit exposure level to avoid adverse effects; and

(b) Use of noise predictions for land use purposes; and

(c) Whether the L_{dn} 50 dBA or the L_{dn} 55 dBA is the appropriate airport noise control boundary; and

(d) Whether the noise modelling assumptions by CIAL and local authorities are appropriate.

Choice of limit exposure to avoid adverse effects

6 Most countries that have noise regulations for land use planning have limits corresponding to about L_{dn} 55 dB or higher for aircraft noise. This contour is considered the onset of adverse effects and special low-noise features may be recommended above that level. Development of noise sensitive buildings is typically discouraged or restricted at a level 10 dB above the "onset contour".

7 No data has been presented that should warrant a change in today's policies regarding acceptable exposure limits for aircraft noise.

Use of noise predictions for land use purposes

8 Reports on an alleged increase in aircraft noise annoyance are most likely caused by non-acoustic factors such as the selection of study areas, survey procedures, and response scales.

9 There are no indications that the noise sensitivity among residents of New Zealand or Greater Christchurch is higher than in similar populations.

Whether the L_{dn} 50 dBA or the L_{dn} 55 dBA is the appropriate airport noise control boundary

10 The new WHO Environmental noise guidelines recommending a limit of L_{dn} 45 dB for aircraft noise to avoid adverse health effects is a European document which has not been adopted by the other 5 WHO regional offices. Aside from the European Commission, no other regulatory authority has endorsed this limit.

11 After the publication of the WHO Environmental noise guidelines for the European Region, two European countries (Switzerland and UK) have presented new evidence that an exposure limit for aircraft noise around L_{dn} 55 dB is a reasonable and correct choice.

12 CIAL relies on a report from Marshall Day in support of their argument that the L_{dn} 50 dBA should be used as the airport noise control boundary. The main conclusions in this Marshall Day report are that annoyance from aircraft noise has increased markedly and that international bodies around the world are considering adopting the new WHO guidelines for environmental noise. I do not agree with these conclusions, and in my view, the Marshall Day report provides no documentation to back these statements.

13 The WHO assumes that their recommendation for environmental noise limits will protect the majority of a normal population from experiencing any noise annoyance at all, and only those that are very noise sensitive will be affected.

14 A regulatory authority, on the other hand, must take into account aspects other than merely the presence or absence of a negative health effect. In most cases, negative effects cannot be completely avoided.

15 The "cost" of annoyance must be compared to other societal costs and benefits such as for instance easy access to transportation. Necessary trade-offs between costs and benefits must be done in a systematic way.

Whether the noise modelling assumptions by CIAL and local authorities are appropriate

16 By making worst-case assumptions with respect to aircraft noise characteristics and air traffic management procedures, i.e., by assuming that aircraft source noise characteristics as well as the air traffic management procedures and thus the resulting flight tracks will not change over the next 60 years, the modelers have ensured that the contours will be significantly larger than reality. It does not make sense to assume that aircraft noise will not decline over the next 60 years.

17 In 60 years' time, when the demand forecasted by Christchurch International Airport Limited (**CIAL**) nears the practical capacity of the airport, single-aisle aircraft will likely be at least 5dB quieter than the current generation of single-aisle aircraft, and the variability in flight tracks will be much lower.

18 Further, the use of an "outer envelope" contour introduces an absolute worst-case scenario for which there is no known relationship with annoyance. The dose-response curves that have been developed internationally are based on a "yearly average exposure" and they should not be applied to an outer envelope.

John-Paul Barrington Clarke

19 February 2024