

### **Summary of William Peter Reeve (Acoustic Engineer)**

- 1 My evidence is supplementary to that of Professor Clarke.
- 2 I have commented on the differences between the two remodelled contour options generated by CIAL and the land use planning implications in the vicinity of my client's sites at Kaiapoi.
- 3 CIAL have submitted that the larger outer envelope, or "busiest 3 month" contour should be incorporated into the proposed Waimakariri District Plan. This would be a different approach to the current operative contour which is an annual average in the directions which affect Kaiapoi.
- 4 While the actual noise experienced on the sites is the same in either case, the averaging period selected could determine whether these sites are broadly "in" or "out" of areas subject to aircraft noise controls that would restrict new residential development.
- 5 Either averaging period is a valid option, as confirmed by the technical remodelling report. This report also notes that a decision on which is selected should involve other planning considerations beyond the expertise of a noise expert. In my view this helps to demonstrate that additional land use controls triggered by sites covered by the larger "busiest 3 month" contour are not necessary from a noise effects point of view.
- 6 The potential adverse effect of aircraft noise is only one of the factors which determine whether a site is appropriate for residential development. In this context, I understand the wider land use planning considerations include the need to provide sufficient land for housing to meet demand in Kaiapoi and enable a well-functioning urban environment, and compact form.
- 7 A 50 dB  $L_{dn}$  outer control boundary is already a conservative control, and these sites are either outside, or at the outer extent of the remodelled "annual average" contour. In my opinion, restricting development of these sites purely because of noise effects would not reflect the balanced approach to land use planning anticipated by NZS 6805.
- 8 The NZS 6805 framework has noise controls which commence at 55 dB  $L_{dn}$ . Above this level NZS 6805 recommends that new residential or other noise sensitive uses are prohibited unless the District Plan permits such uses with appropriate acoustic insulation. At levels below 55 dB  $L_{dn}$  a typical dwelling construction would provide the sound insulation required to achieve satisfactory internal levels.

- 9 NZS 6805 does provide decision makers with discretion to locate the projected sound exposure contours in a position further from, or closer to the airport after considering eight planning matters, one of which is the effects of noise on community health and amenity.
- 10 In this case, CIAL seek an outer control that is based on a lower 50 dB  $L_{dn}$  threshold as well as a “busiest 3-month” contour, with future projections based on ultimate runway capacity. This represents a series of stacked conservatisms and means that the remodelled contours that affect my client’s sites go further than the baseline values set in NZS 6805 intended to protect community health and amenity values.
- 11 I have also provided comment and analysis of noise complaints data received from CIAL. In my opinion this can provide useful insight about trends in location and source of complaints for the subset of the population who experience aircraft noise and are motivated to complain. This can be used to extrapolate the likelihood of a reverse sensitivity complaints burden on CIAL arising from the proposed development of the subject sites.
- 12 An analysis of complaints data shows that complainants are distributed across populated areas of Christchurch City and surrounds. Many complaints come from areas exposed to levels of aircraft noise below 50 dB  $L_{dn}$ .
- 13 Similarly, for Auckland Airport, while there is a concentration of complaints from Papatoetoe and similar areas where current or future noise levels are above 55 dB  $L_{dn}$ , there are also many complaints from locations further from the airport – including serial complainants.
- 14 The 2002 Taylor Baines Christchurch study also provides some local context on the prevalence of aircraft noise complaints at various noise levels. This study confirmed that the combined percentage of direct and formal complaint to Council or CIAL was low, and relatively similar between a core area exposed to noise levels of 45 – 50 dB  $L_{dn}$ , and an extended area exposed to noise levels of 50 – 65 dB  $L_{dn}$ .
- 15 The relationship between  $L_{dn}$  levels and likelihood of formal complaints is also demonstrated in a Philadelphia study. In that case, the mean number of complainant households was also confirmed to be low at around 10 complaints per 10,000 people, with no distinct difference in the number of complainant households between 45 – 50 dB  $L_{dn}$  and 50 – 55 dB  $L_{dn}$  (a comparison which is not available from the Taylor Baines report).
- 16 My analysis indicates that the incidence of complaints is relatively low, and similar both above and below 50 dB  $L_{dn}$ . This provides no support to the idea that discrete areas of residential development close to the 50 dB  $L_{dn}$  contour would result in a meaningful change to the current or future complaints burden for CIAL.