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Mark Benjamin
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Dear Mark

LUC60389929 - 38 RAWENE AVENUE, WESTMERE

Thank you for a copy of the request from Auckland Council asking for further information regarding the existing noise environment and the potential effects of the proposed helicopter activity.

The following sets out the requests followed by our response. I do note that it has taken some time to respond to the request and this is due to the adverse weather conditions we have been experiencing making representative noise monitoring difficult. The strong winds we have been experiencing can generate significant noise in the trees and wave noise when measuring near the water's edge can result in high noise levels. The monitoring reported has been restricted to generally calm to light wind conditions so representing the lower range of noise levels experienced in the environment.

a) *Please comment on the predicted L_{dn} levels when compared to the existing ambient L_{dn} levels at receivers (in all directions, not just those located along Marine Parade) that are closer to the helipad than the horizontal distance travelled by the helicopter as it reaches 500 feet.*

To predict a L_{dn} contour it is necessary to have a specific noise source, such as a helicopter or traffic. Environmental noise is a combination of noise from nearby noise sources and distant noise sources that are well clear of a given receiver position so impossible to predict with any certainty. For this reason, field measurements have been undertaken over a number of days at representative locations in the area.

The traffic noise effects in the Marine Parade area were reported on 18 March 2022 in terms of the 24 hour L_{Aeq} level. As shown on Figure 1 (which is a copy of Attachment B in our report dated 18 March 2022) field measurements were undertaken near the coastline and close enough to West End Road so that traffic generally controlled the level of noise This shows the 24 hour L_{Aeq} generated from traffic noise plus general environmental noise was 46 – 48dB $L_{Aeq(24hr)}$ with the L_{dn} being 50 – 51dBA for the same period. That is, the L_{dn} is typically 3 - 4dB above the 24 hour L_{Aeq} traffic noise contours as shown on Figure 1. From this result, the effects of any helicopter noise will be less in the Marine Parade area than experienced from the existing environmental noise.

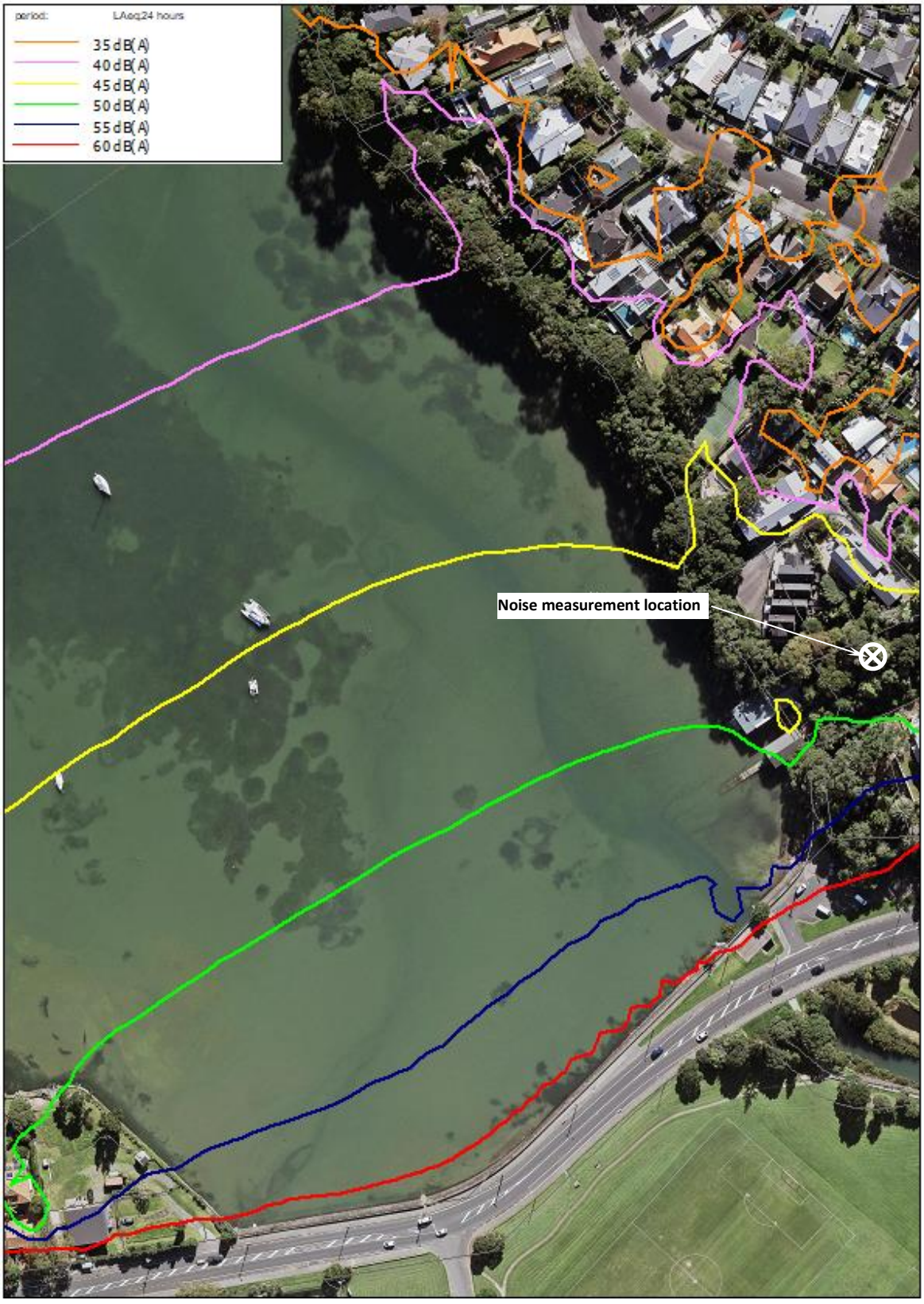

Figure 1. Existing traffic noise to the north east dB $L_{Aeq(24hr)}$

The most exposed site to helicopter noise is 29 Rawene Road so field monitoring was undertaken adjacent to the western site boundary, which is the most exposed boundary to the helicopter noise. Measurements were undertaken in calm weather for the first three days after which the conditions varied between calm to light winds with the occasional gust passing through. The L_{dn} for a Tuesday to the following Monday was:

54, 52, 53, 54, 55, 50 and 54dBA L_{dn} to give an arithmetic average of 53dBA L_{dn}

The predicted helicopter noise at this point is 50dB L_{dn}, 3dBA below the existing noise environment on a calm day. Although there are boats shown in the bay at the end of Rawene Avenue there were no boats moored in the area during the noise monitoring to generate wave slap or noise in the rigging.

For the dwellings to the west of the proposed helipad the existing noise environment is influenced at the front of the sites by traffic on Rawene Road. At the rear of these sites the noise is influenced by any wave action when the tide is in and general environmental noise. Measurements were undertaken at the rear (northern) boundary of 30/32 Rawene Avenue and 20 Rawene Avenue as shown on Figure 2.

Figure 2. Location of noise monitoring

The measured L_{dn} for a Saturday, Sunday, Monday and Tuesday was:

32 Rawene Ave	50, 56, 65, 54dB L_{dn} to give an arithmetic average of 56dBA L_{dn}
20 Rawene Ave	48, 51, 61, 50dB L_{dn} to give an arithmetic average of 53dBA L_{dn}

These levels varied each day, although they were always well above the predicted helicopter L_{dn} level for the respective site. As the foreshore has a similar noise environment for the full length of the bay, as shown on Figure 2, it is reasonable to assume the L_{dn} level will be similar for all residents in this area.

Local checking of the noise at the front boundaries of the properties on Rawene Avenue showed the noise level was generally 2 – 5dB above the noise level measured at 32 and 20 Rawene Avenue. This noise was due to distant traffic. The noise from vehicles passing on Rawene Avenue was excluded from these measurements.

In summary, based on field measurements of the existing noise environment the L_{dn} from the proposed helicopter will be below the lowest measured existing environmental noise level.

b) Please provide separate maps of predicted $L_{Aeq,24h}$ and L_{AFmax} contours within the aforementioned area.

Note: The intention is to understand the scale and intensity of effects on adjacent properties and public spaces during a helicopter take-off and landing when noise would be clearly audible and noticeable in that moment relative to the existing noise environment.

As for the L_{dn}, the 24 hour L_{Aeq} cannot be calculated for general environmental noise. However, this value has been calculated from the measurement sites as set out above. The results are:

29 Rawene Avenue	52, 49, 51, 49, 47, 52dB $L_{Aeq,24hr}$
32 Rawene Avenue	49, 51, 61, 53dB $L_{Aeq,24hr}$
20 Rawene Avenue	43, 46, 57, 47dB $L_{Aeq,24hr}$

As for the L_{dn}, the noise level at the front boundaries of the properties on Rawene Avenue was generally 2 – 5dB above the noise level measured at 32 and 20 Rawene Avenue. The noise in Rawene Avenue was influenced by distant traffic. The noise from vehicles passing on Rawene Avenue was excluded from these measurements.

Figure 3 shows the helicopter arrival L_{AFmax} noise contours at 1dB L_{AFmax} steps and Figure 4 the departure L_{AFmax} noise levels.

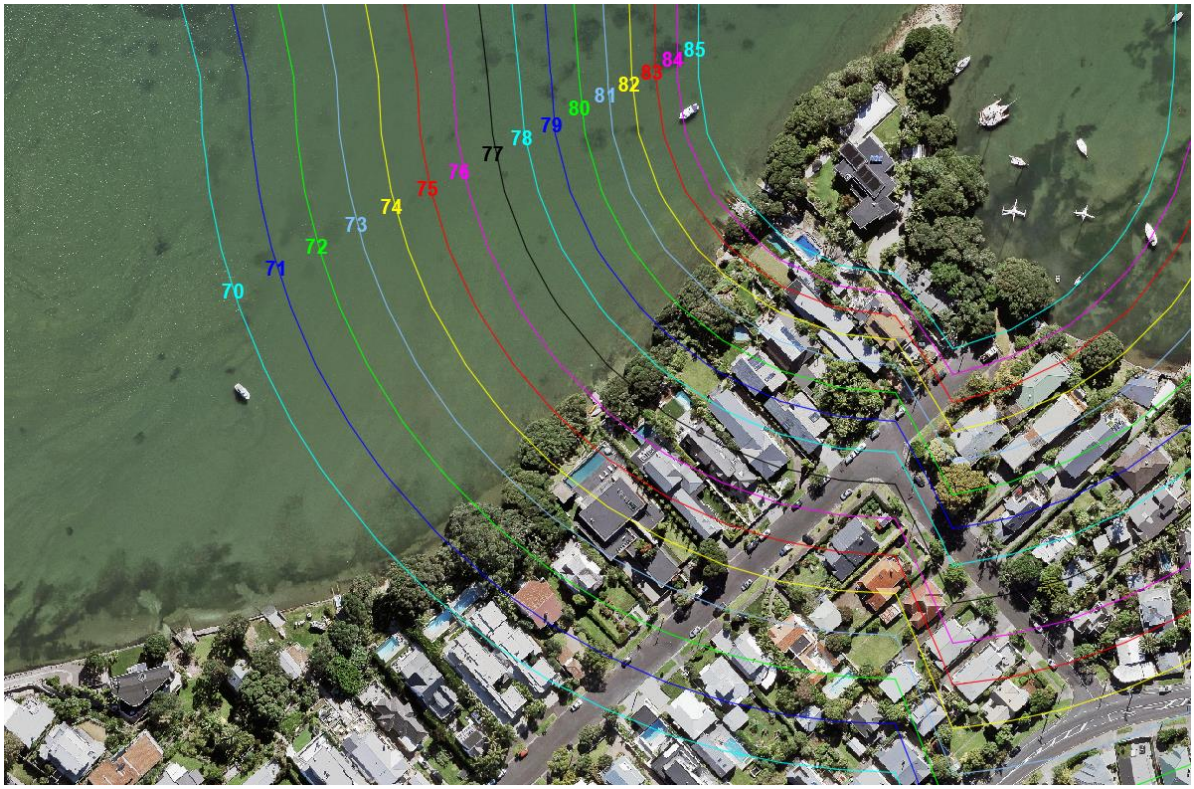

Figure 3. Predicted helicopter arrival dB L_{AFmax} noise contours

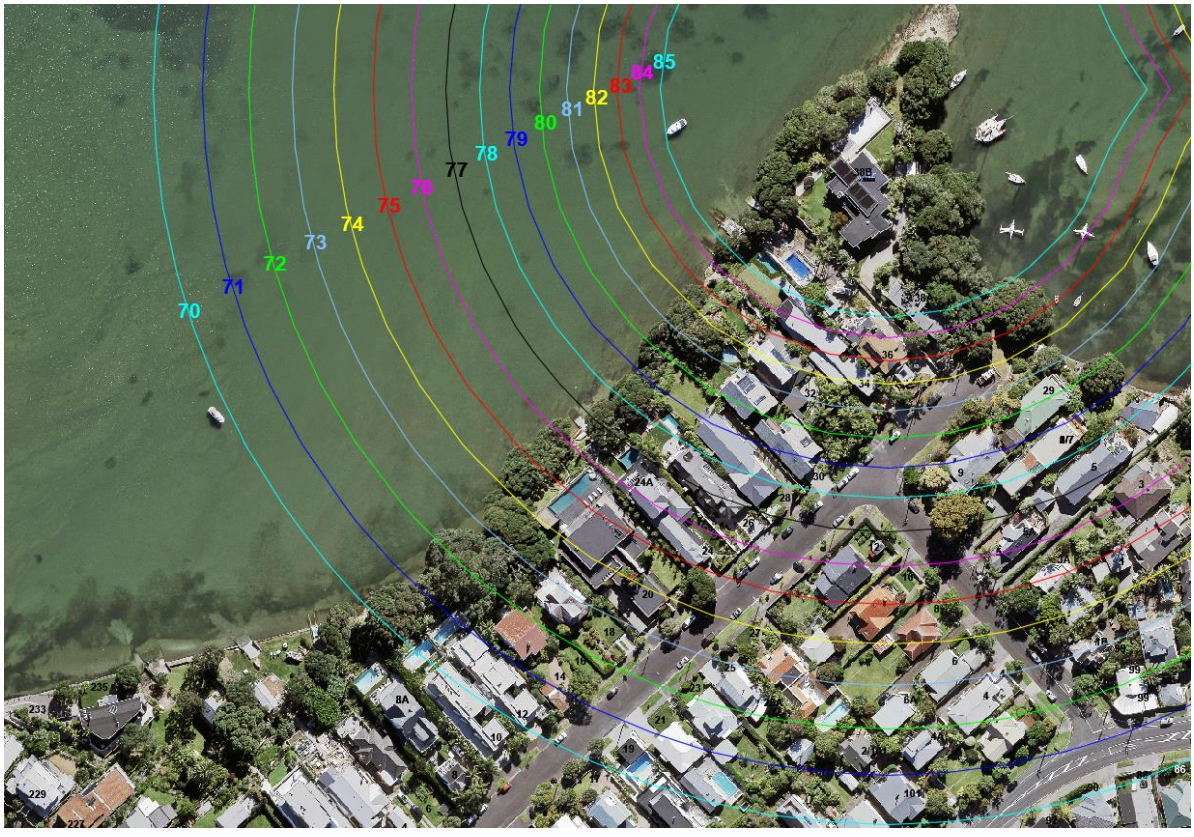

Figure 4. Predicted helicopter departure dB L_{AFmax} noise contours

The maximum existing noise environment has been measured at 1 second intervals throughout the monitoring period and compared to the existing measured noise environment. For 29 Rawene Avenue the existing L_{AFmax} is typically 70 – 79dB during the daytime. As shown on Figures 3 and 4 the L_{AFmax} at this location will be 84dB for the arrival and 82dB for the departure for a maximum of four times a day (2 x arrivals and 2 x departures) over a total duration of less than 1 minute.

At 32 Rawene Avenue the measured L_{AFmax} was typically 70 – 80dB. As shown on Figure 3 the predicted maximum level at this location will be 80dB for the arrival and 81dB for the departure.

At 20 Rawene Avenue the measured L_{AFmax} was typically 65 – 77dB. As shown on Figure 3 the predicted maximum level at this location will be 75dB for the arrival and 76dB for the departure.

In summary, the noise from the helicopter will not have any noticeable cumulative effect on the existing L_{dn} level for any of the residents in the area. This does not mean they will not hear the helicopter, but their daily noise exposure will not change.

The maximum level will be typically 5 – 8dB L_{AFmax} above the existing noise environment. This level of noise will be noticeable although it is not considered to be unreasonable. As an example, *NZS 6807:1994 Noise Management and Land Use Planning for Helicopter Landing Areas* adopts a level of 90dB during the daytime in any residential zone as a trigger (not a control) to assess helicopter noise. The Auckland Unitary Plan – Operative in Part adopts a level of 85dB L_{AFmax} as both the daytime and night time limit for helicopter noise (although it is difficult to understand the reasoning for the same level being adopted for both the daytime and night time).

Should you have any questions regarding the above please do not hesitate to contact me.

Yours sincerely
Hegley Acoustic Consultants

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