



48.5332.R3:MSC

8th November 2018

Tweed Shire Council
PO Box 816
MURWILLUMBAH NSW 2484

Attention: Ms. C. Forbes

Dear Sirs,

PEER REVIEW - ACOUSTIC ASSESSMENT

PROPOSED HELIPAD

477 URLIUP ROAD, BILAMBIL

The purpose of this report is to undertake an acoustic assessment of potential helicopter operations for a helipad located on private property at 447 Urliup Road, Bilambil.

Two applications for the helicopter landing pad has been submitted to Tweed Shire Council.

The first application under DA 17.0805 was refused by the Council.

The second application under Development Application 18.0637 modified the hours and number of movements.

I have been requested by Council to review both development applications with respect to acoustic reports prepared by Craig Hill Acoustics.

My review of the first application (TAG reference 48.5332.R1 dated 5 November 2018) recommended refusal of the application in light of the inadequate acoustic assessment that formed part of the application and the lack of noise data to permit an evaluation of the likely cumulative noise, i.e. the application must automatically fail as there was no valid acoustic assessment.

My review of the second application (TAG reference 48.5332.R2 dated 7 November 2018) identified the application could satisfy the noise target subject to certain requirements.

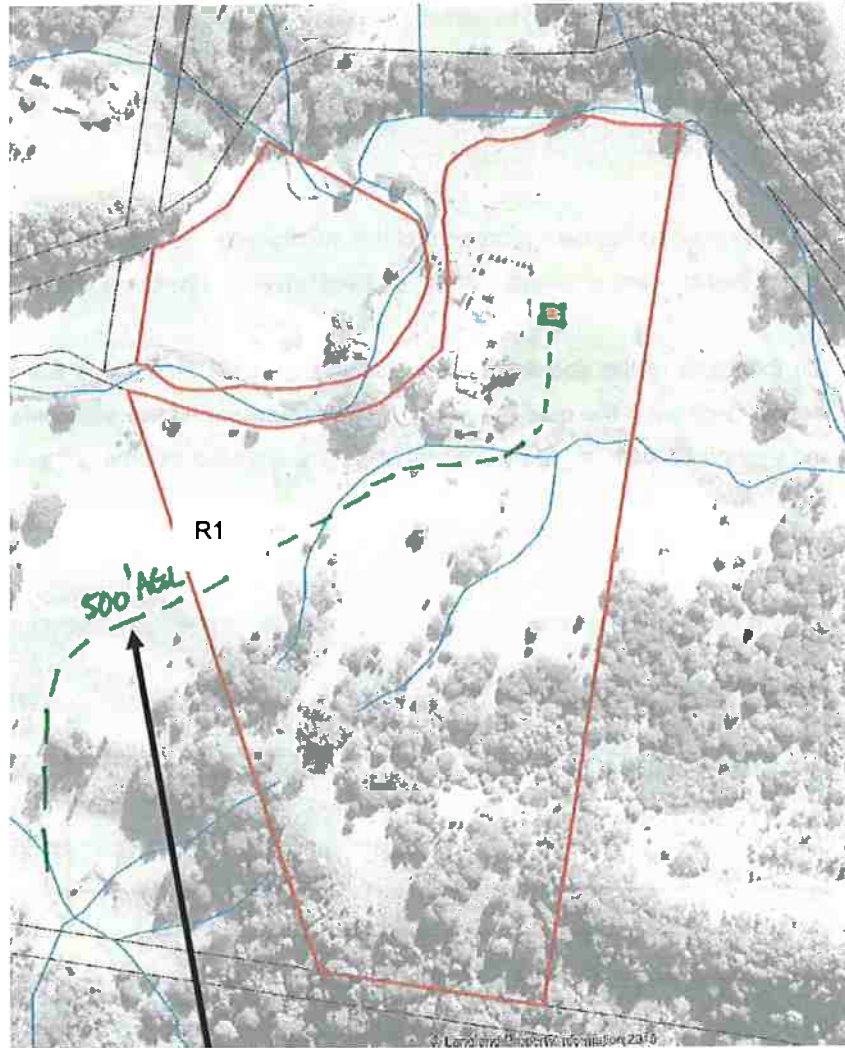
I have been requested by Council to review the first application taking into account the additional acoustic information contained in the second application, with the inclusion of other data for a Bell 206B JetRanger-III that is available to evaluate the potential ANEF noise contribution.

When correcting the misuse of terminology by the author of the acoustic assessment report, then the revised application for a helipad at Lot 1 Deposited Plan 736658, 477 Urliup Road, Bilambil, is for a maximum of 14 movements per week by a Bell 206B-III JetRanger with an interpretation on the basis of the development application that there would be a maximum of two movements on any day.

In relation to the relevant noise data and assessment procedures I rely upon the discussion set out in the review report for the second application and have considered an ANEF target of 13 as the noise exposure limit.

The acoustic assessment accompanying the application nominated 5 residential receivers shown in the figure below, and a curved flight path shown on the following page. The flight path is not a straight in and straight out flight path, normally utilised for one-way helipads.





Acoustic Assessment

For the nominated hours of operation and the advice that the helipad is for private purposes, specifically to provide the applicant with personal transport to and from work, then the flight prior to 7 am is considered to be a take-off and as such occurs in the ANEF night period, whilst the landing would occur prior to 6.30 pm and is assumed to therefore to occur in the ANEF daytime period.

With respect to the idle and hover components I have utilised other measurements of a Bell 206 JetRanger II for a number of Sydney CBD Heliport assessments and adjusted the LAE for distance attenuation to determine a contribution from those components.

It is noted that for the start up or shutdown of a helicopter there is an extended period



of time (typically 2 minutes) to permit stabilisation of engine temperature. The 30 second idle period for testing (from AS2363) is to permit an audible break between individual movements. The author wrote the test procedure in AS 2363 based on his previous testing.

For the hover component I have used the 30 seconds identified in the flight procedure noting that in some case the in ground effect hover can be more than 30 seconds.

On the basis of the above assumptions and the data from Table 5.2 in the acoustic assessment (with the qualifications described above and the additional material from the second application) the following Table presents the derived contributions for each location.

Location	Mode	Leq dB(A)	Time (secs)	L _{AE}	Movements		L _{Aeq} (24 hrs)	ANEF
					day	night		
R1	T/O	64	181	86.6	1	0	37.2	
	Land	68	160	90.0	0	1	46.7	
	Idle	54.7	120	75.5	1	1	33.1	
	Hover	60.7	30	75.5	1	1	33.1	
	Cumulative						47.5	
R2	T/O	62.2	181	84.1	1	0	34.8	
	Land	65	160	86.4	0	1	43.0	
	Idle	59.3	120	80.1	1	1	37.7	
	Hover	65.3	30	80.1	1	1	37.7	
	Cumulative						45.4	
R3	T/O	61.4	181	82.8	1	0	33.4	
	Land	64.7	160	85.7	0	1	42.3	
	Idle	57	120	77.8	1	1	35.4	
	Hover	63	30	77.8	1	1	35.4	
	Cumulative						44.2	
R4	T/O	65	181	85.8	1	0	36.4	
	Land	65	160	86.9	0	1	43.5	
	Idle	61.4	120	82.2	1	1	39.8	
	Hover	67.4	30	82.2	1	1	39.8	
	Cumulative						46.6	



Location	Mode	Leq dB(A)	Time (secs)	L _{AE}	Movements		L _{Aeq} (24 hrs)	ANEF
					day	night		
R5	T/O	64	181	85.8	1	0	36.4	
	Land	62	160	84.3	0	1	40.9	
	Idle	54.2	120	75.0	1	1	32.6	
	Hover	60.2	30	75.0	1	1	32.6	
	Cumulative						43.1	

From the above results it can be seen that the proposed operations with a take-off before 7am and a landing between 7am and 7pm on each day would result in an ANEF less than 13, which is the appropriate criterion for a new flight path in an area not previously exposed to helicopter noise.

Under the requirement to consider potential adverse impacts under the *Environment Planning and Assessment Act* the noise from the helicopter operations significantly exceeds the “ambient Leq” of 45 dB(A) identified in the second acoustic report (for unspecified times) and has the potential to give rise to sleep disturbance at the residential dwellings identified as R1 – R5 inclusive.

Based upon the maximum level from helicopter movements recorded at locations R1 – R5 (Table 5.2 of the second acoustic report) there is the potential for sleep disturbance during the “night period”. The maximum levels are greater than the 65 dB(A) limit proposed in the Nessdee P/L matter and significantly more than background + 15 dB(A) being the general sleep disturbance limit provided by the EPA in their *Noise Guide for Local Government*, or the 52 dB(A) limit nominated by the EPA in the *Noise Policy for Industry* document.

If the helicopter operations were restricted to daytime operations under AS 2021 (between 7am and 7pm Monday to Saturday) and 8am to 6pm on a Sunday to accord with the EPA’s definition of daytime, then the issue of sleep arousal would be resolved and the resultant ANEFs would be reduced with the highest ANEF being a value of 7.7 at location R1.



Conclusion

Development application DA 17.0805 for the use of a helipad located on private property at 447 Urliup Road, Bilambil, included a noise Impact assessment from Craig Hill Acoustics, dated 15 November 2017.

The application was refused by Council. On the basis of the material submitted with the application there was inadequate material to establish the noise exposure to determine the ANEF level. Accordingly, on my review of the application I determined that without the appropriate acoustic assessment the application should be refused on the basis of an inadequate acoustic assessment.

However, I am instructed by the Council following my review of the application to use my best endeavours to determine whether noise emission from one take-off and one landing a day from the subject site could satisfy the relevant acoustic criteria when assessed utilising the Australian Noise Exposure Forecast (ANEF) system.

For an area subject to existing aircraft noise, the target of ANEF 20 is nominated in Australian Standard AS 2021, and documentation from AirServices Australia, as being an acceptable external noise level from aircraft operations with respect to residential developments.

In view of the ANEF system (and recommended criteria) being based upon persons being pre-exposed to aircraft noise, the Commonwealth Government via the Federal Airports Corporation and the Department of Transport has identified for new flight tracks or airports that ANEF 13 is to apply for greenfield sites (also confirmed in the Nessdee matter).

The acoustic assessment submitted with the application does not (as required by AS 2363) provide noise information related to the hover mode, or the idle mode of the helicopter, but identifies noise levels with respect to the "flight".

The assessment of the helipad under the ANEF system involves all noise associated with the helicopter that is detected at receiver locations from start-up of the helicopter to shut down of the helicopter.

In this regard additional data for the nominated helicopter type has been extracted from acoustic measurements conducted for the Sydney CBD heliport where such material was placed in the public domain and was subject to independent auditing via a Commission of Inquiry that verified the accuracy of the results.



The subject application under DA 17.0805 proposes operations in the morning prior to 7 am, which by way of the ANEF system involves a weighting factor to be added to those flights/operations of +6 dB as a result of night-time operations being considered equivalent to 4 day time operations.

On the basis of the restriction of 14 helicopter movements per week and a maximum of two movements per day, the various levels in terms of the ANEF have been determined by utilisation of the A-weighted levels with a correction factor of -35 dB being a method originally proposed by the New South Wales State Pollution Control Commission in 1982. The -35 dB correction factor has also been used by the Civil Aviation Authority for their assessment of helicopter transit lanes in Sydney and by AirServices Australia in their assessment of take-off operations to the north from the third runway at Sydney Airport (Runway 34R) being a separate exercise some year later after the original EIS for the Third Runway.

The issue of helicopter operations from the subject site prior to 7 am, Monday to Saturday, or prior to 8 am on Sundays occurs in the AirServices/EPA night-time respectively.

The maximum levels obtained by Craig Hill Acoustics at each of the five reference locations represents noise levels significantly greater than that recommended by the EPA in their *Noise Policy for Industry* or the *Noise Guide for Local Government*.

Night-time operations exceed the EPA noise limits.

If the Council is minded to grant consent, then the following conditions are recommended:

- The development is restricted to the use of a Bell 206B JetRanger - III helicopter.
- The operation of the helicopter is restricted to a maximum of two persons on board the aircraft when in flight.
- The only flight path that is to be used for the subject helipad is the flight path shown in the Craig Hill Acoustics report of 15 November 2018 that accompanied the application.



- The subject helicopter must fly the nominated flight path on both arrivals and departures and is not permitted to deviate from the nominated flight path.
- The hours of operation of the helipad are restricted to 7am – 7pm Monday to Saturday and 8am to 6pm on Sundays.
- The development is restricted to no more than 2 movements on any day. A movement is defined as a take-off or a landing.
- There will be no maintenance of the helicopter carried out on site.
- Prior to the commencement of operations, the Application shall provide to Council documentation to identify the wind conditions (strength and direction) that will result in the approved flight path not being able to be used.
- Any modification to the flight path, operational restrictions or conditions nominated in this consent must be the subject of an application and include an acoustic assessment of the resultant impact from the proposed modifications.

Yours faithfully,

THE ACOUSTIC GROUP PTY LTD


STEVEN E COOPER

