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PROPOSED SHAO LIN TEMPLE DEVELOPMENT SITE NEAR HMAS *ALBATROSS*: NOISE ASSESSMENT REPORT

REPORT 36.4586.R1:ZSC

Prepared for: *Land Planning and Spatial Information*
Strategic Planning and Estate Development Branch
Infrastructure Division
Department of Defence

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ATTACHMENT

1.0 SITE CONTEXT

The site for the proposed Shao Lin Temple is located to the south east of HMAS *Albatross* on Currambene Creek. The site is located within the Nowra Military Control Zone under the 2 nautical mile wide helicopter flight corridor along Currambene Creek between HMAS *Albatross* and the Jervis Bay Training Area. This open terrain corridor has been used as a helicopter flight corridor for many years. It will continue to be used for this purpose as it provides opportunities to land in emergency situations and is free of transmission lines and urban development.

The transit lane for helicopters between HMAS Albatross and Jervis Bay training areas is identified and affectionately known as "Husky Lane." The centreline of the Husky Lane commences from the airfield at HMAS *Albatross*, passes over Falls Creek, Comberton Grange, Woollamia, Huskinson and then to Jervis Bay training areas (see Situation Map).

The two-directional operation of helicopters on the nominal centre flight track utilises a corridor of two nautical miles in width with a normal transit height of 1,000ft above ground level. Dependent upon weather conditions, however, the transit height may be reduced to 200ft above ground level for safety reasons.

2.0 METHODOLOGY

Noise contours (in various forms), typically drawn around an airport or a flight corridor, are produced using the Integrated Noise Model (INM). INM is a sophisticated computer modelling tool developed by the US Federal Aviation Administration and has been adopted in Australia (and internationally). Preparation of the input data for the INM requires detailed information regarding aircraft flight tracks, aircraft operational profiles, aircraft noise signature, aircraft movement numbers on specific flight tracks, time of day or night of the operations and the ground topography.

The noise source data utilised in the INM program are a series of NPD (Noise Power Distance) curves which depict resultant noise levels during aircraft operations at various distances from each aircraft.

NPD curves applicable to the Sea King, Seahawk and Squirrel helicopters operating at HMAS Albatross have been developed for specific use in the INM program and relate to normal helicopter operations at the airfield for Australian conditions.

The number of helicopter transits that utilise the Husky Lane vary according to HMAS *Albatross* operational requirements. At times the transits can be as low as 25 movements per week but, at other times, exceed 100 per week. The predominant helicopter using the Husky Lane is the AS350 Squirrel single engine helicopter. The other helicopter types based at HMAS Albatross utilise the Husky Lane less frequently.

Whilst the Shao Lin Temple site is outside the 20 Australian Noise Exposure Forecast (ANEF) contour on the 2014 ANEF map for HMAS *Albatross*, the southern portion of the site is located within the two nautical mile wide transit corridor and is affected by aircraft noise. An assessment of the maximum noise levels (depicted by the 50, 60 and 70 dB(A) contours along the Husky Lane transit corridor) has been used to analyze the impact of aircraft noise.

The portion of the Husky Lane shown on the situation map was examined in finer detail. The maximum noise level for each of the three helicopter types conducting two-directional overflight transits across the width of the two nautical mile corridor has been computed, taking into account the topography of the area that can influence the position of the outer (or lower) noise contours.

3.0 FINDINGS

Noise contours for the three helicopter types have been calculated for a 1,000ft above ground level overflight and for an overflight at 200ft above the ground level. The resultant noise contours are shown in Figures 1-3.

Figure 1: *Maximum Level dB(A) for Seahawk Helicopter* shows most of the site within the 60 dB(A) contour for the flight height at 200 feet and three quarters of the site within the 60 dB(A) for the flight height at 1000 feet. The southern portion of the site is within the 70 dB(A) contour for the 1000 feet flight height and slightly less than half of the site is within the 70 dB(A) for the 200 feet flight height.

Figure 2: *Maximum Level dB(A) for Seaking Helicopter* shows three quarters of the site within the 60 dB(A) contour for the flight heights at 200 feet and 1000 feet. More than one third of the site is within the 70 dB(A) contour for the flight heights at 200 feet and 1000 feet.

Figure 3: *Maximum Level dB(A) for Squirell Helicopter* shows approximately three quarters of the site within the 60 dB(A) contour for the flight height at 200 feet and about half of the site within the 60 dB(A) for the flight height at 1000 feet. The southern one quarter of the site is within the 70 dB(A) contour for the 200 feet flight height and less than one quarter (inside of the flight corridor) of the site is within the 70 dB(A) for the 1000 feet flight height.

Australian Standard AS2021-2000 "Acoustics – Aircraft Noise Intrusion – Building Siting and Construction" identifies indoor design sound levels for a range of building types and land use activities. Table 3.3 of this Standard recommends indoor maximum design sound levels of 50 dB(A) for bedrooms of residences, churches and religious activities. The siting of noise sensitive buildings needs to consider these noise levels. Noise attenuation measures may also be necessary in order to achieve the Australian Standard's recommended indoor maximum design sound level.

Significant portions of the site are within the 70dB(A) contour. By way of comparison, in busy urban environments, a 70dB(A) ambient noise level is within the acceptable upper limit of external noise. This is not the case, however, in rural environments such as the Shao Lin Temple site where ambient noise levels are much lower. Community reaction around transit air routes would suggest that the desirable external noise level for an 'open windows' situation would be in the order of 60 dB(A).

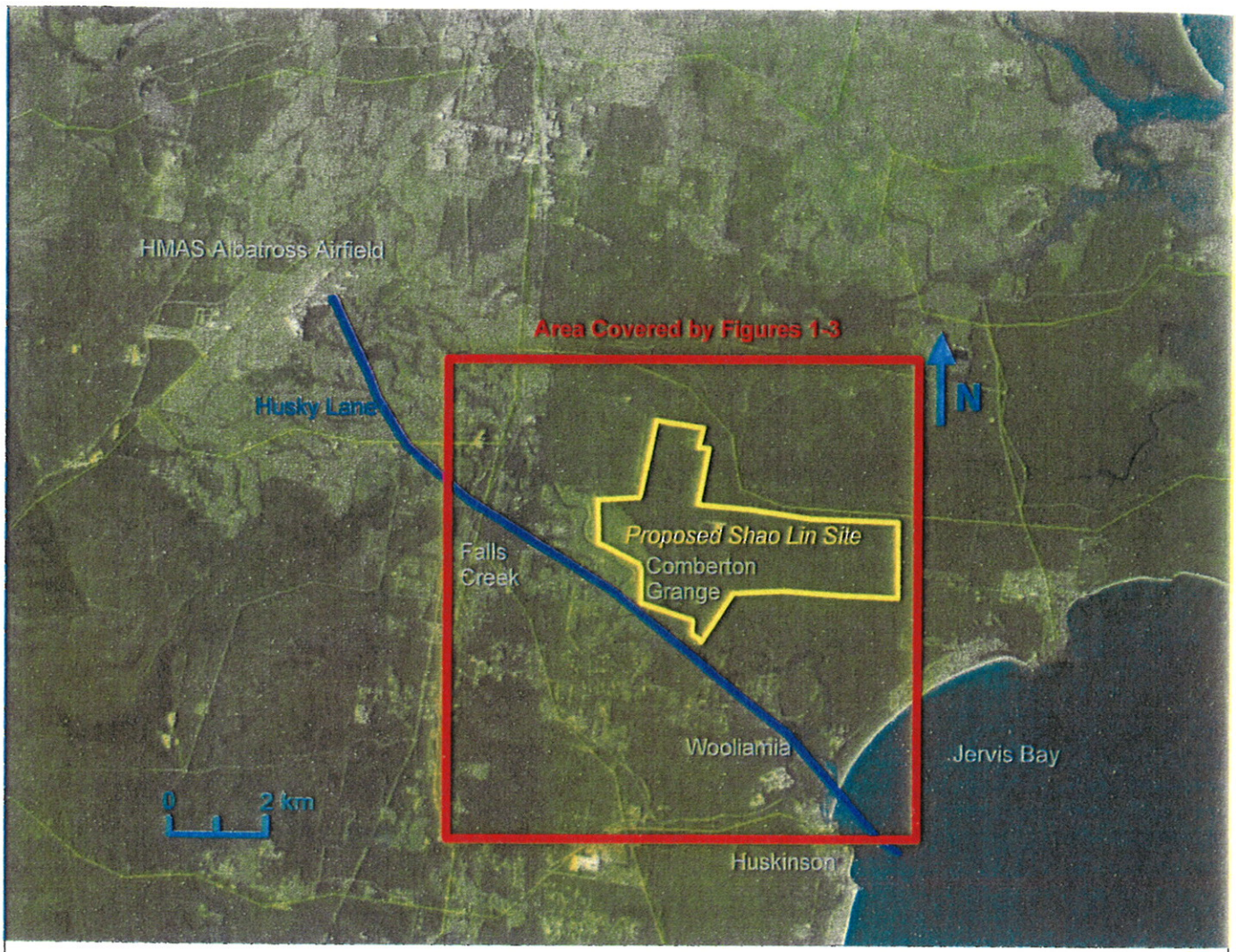
4.0 CONCLUSION

A significant portion of the Shao Lin Temple site is within the 70dB(A) contour resulting from helicopter operations using the flight corridor between HMAS *Albatross* and the Jervis Bay Training Area. Consequently the site is, and will continue to be, affected by aircraft noise.

Future use of Husky Lane, and therefore the extent of aircraft noise, may increase as a result of possible future increases in Defence operational and training requirements. Accordingly it would be prudent to take a conservative, precautionary approach to land planning decisions in the vicinity of the Husky Lane.

Accordingly, it is strongly recommended that planning conditions be imposed to ameliorate the impact of aircraft noise on the development. It is desirable that all habitable buildings must be insulated against aircraft noise in accordance with the requirements of Australian Standard AS 2021 – 2000. The use of appropriate building design and construction attenuation measures would mitigate aircraft noise impacts within buildings but may require at some locations the provision of mechanical ventilation. It should be noted, however, that treating the interior acoustic environment of buildings does not mitigate impacts on the use and enjoyment of private outdoor spaces and recreational areas such as amphitheatres, picnic areas and golf courses.

In view of the requirement to address aircraft noise, appropriate notations should be incorporated into planning certificates that may be issued under section 149 of the *NSW Environmental Planning and Assessment Act 1979* so that prospective purchasers of dwellings associated with the proposed development are advised that the land is affected by aircraft noise.



Situation Map

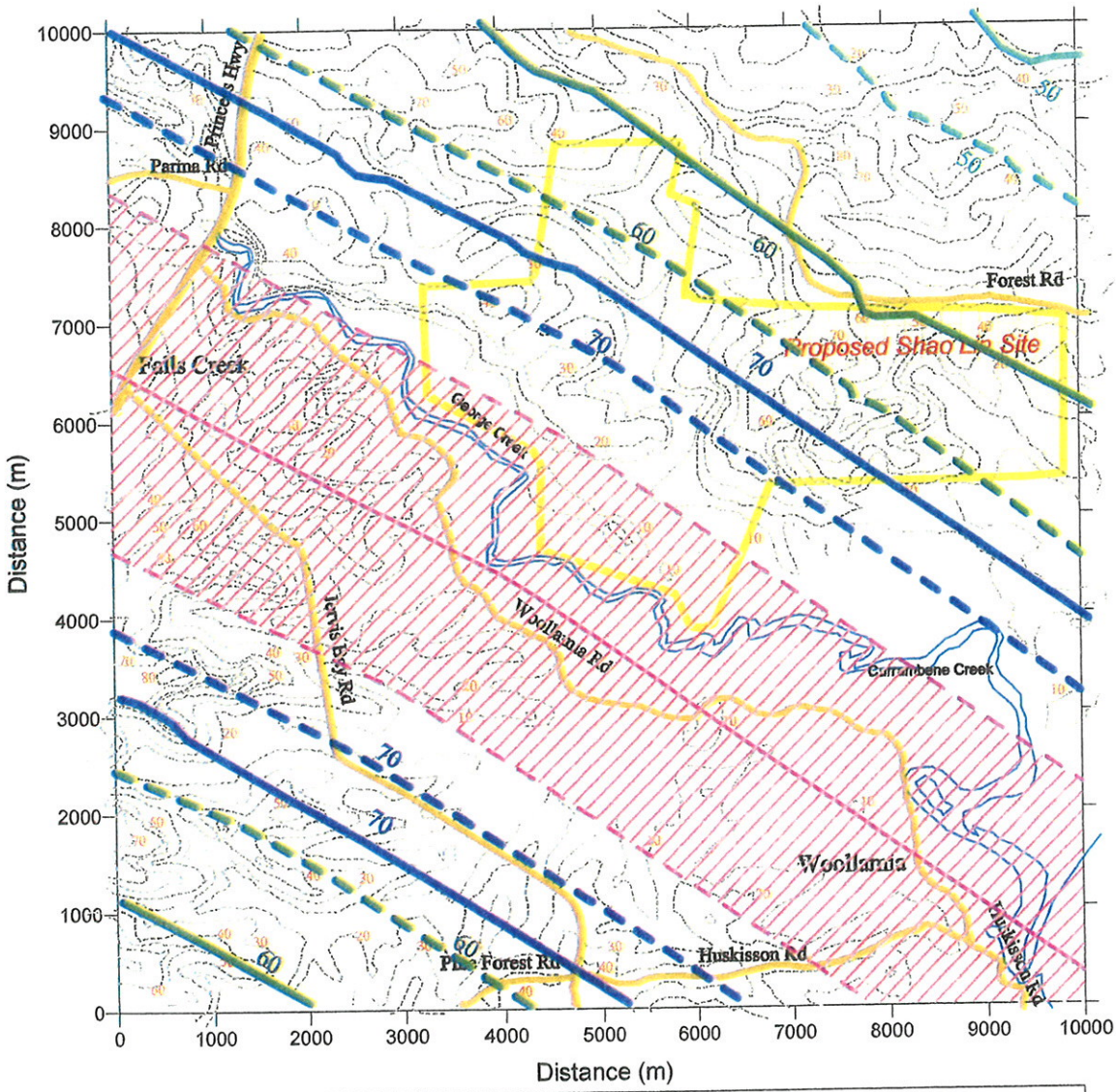


Figure 1: Maximum Level dB(A) for Seahawk Helicopter
2 nautical miles wide transit corridor
200 feet and 1000 feet flight height above ground level

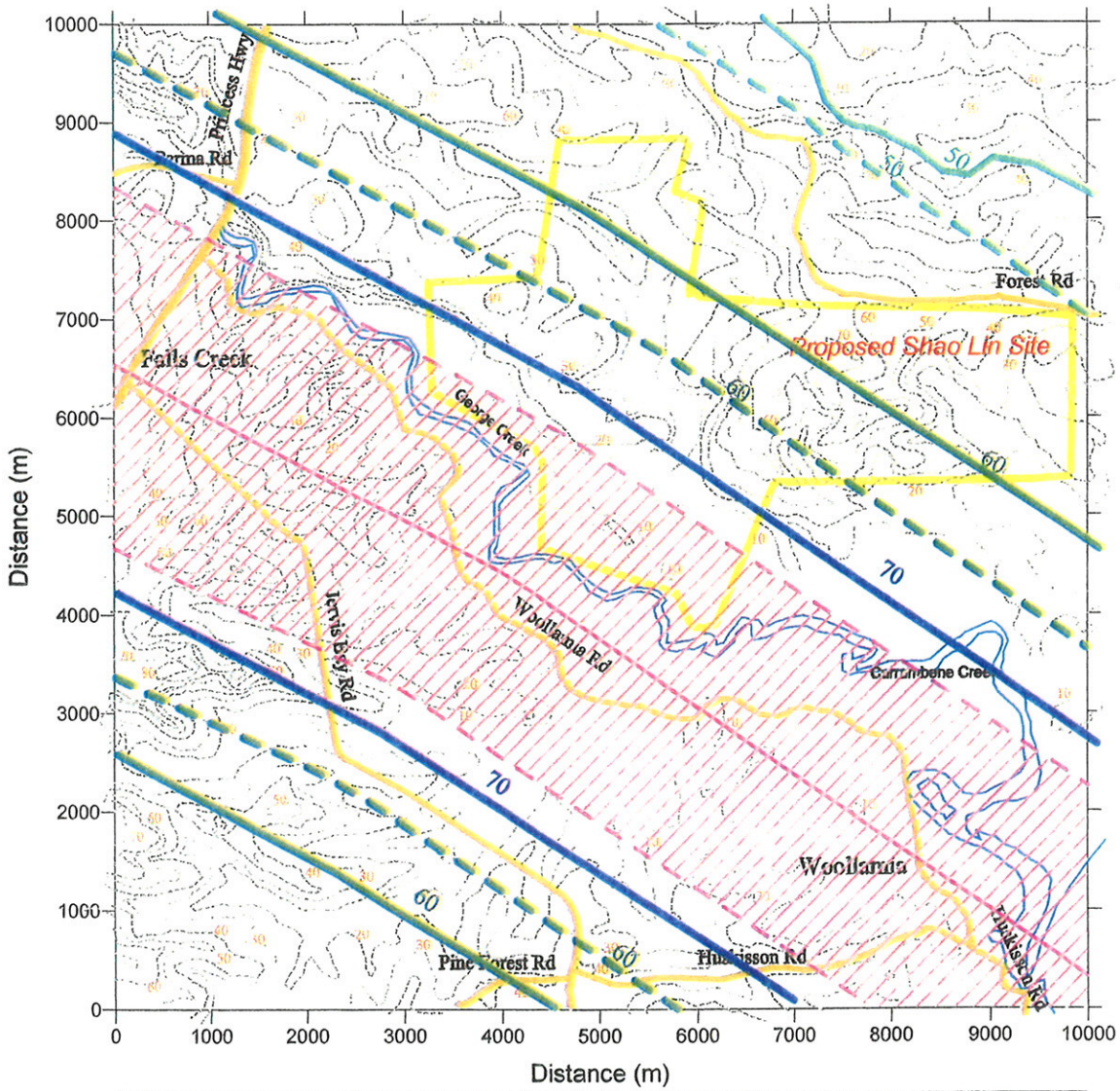


Figure 3: Maximum Level dB(A) for Squirrel Helicopter
2 nautical miles wide transit corridor
200 feet and 1000 feet flight height above ground level

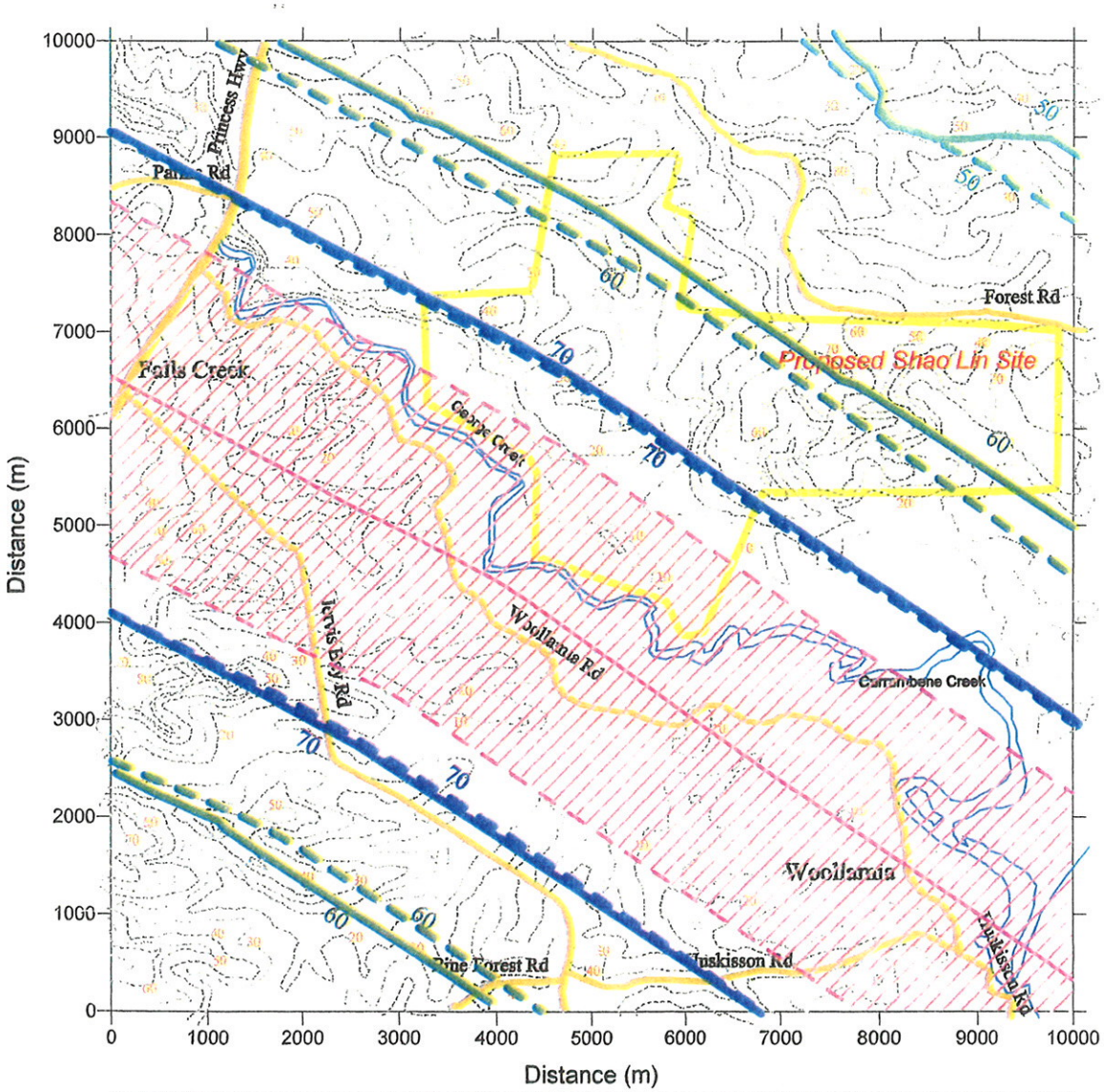


Figure 2: Maximum Level dB(A) for Seaking Helicopter
2 nautical miles wide transit corridor
200 feet and 1000 feet flight height above ground level