

Attention: Katrina Hill

30 HOLLAND COURT — NOISE IMPACT ASSESSMENT

A subdivision is proposed for 30 Holland Court, Howrah, to comprise nominally 8 lots. As the development is within 50m of Rokeby Road, it is within the road and railway attenuation area under the Tasmanian Planning Scheme, and thus requires a traffic noise assessment to determine its suitability for residential use. This letter presents such an assessment, conducted by NVC in December 2022.

1. BACKGROUND

The proposed site (white outline) is a large lot currently comprising the Howrah Church of Christ at its eastern end, with vegetation on the western portion. The land is zoned Community Purpose (white overlay in Figure 1.1), with General Residential zoning (red overlay) to the site's east and west, and Low Density Residential zoning to the south and south-east (pink overlay).

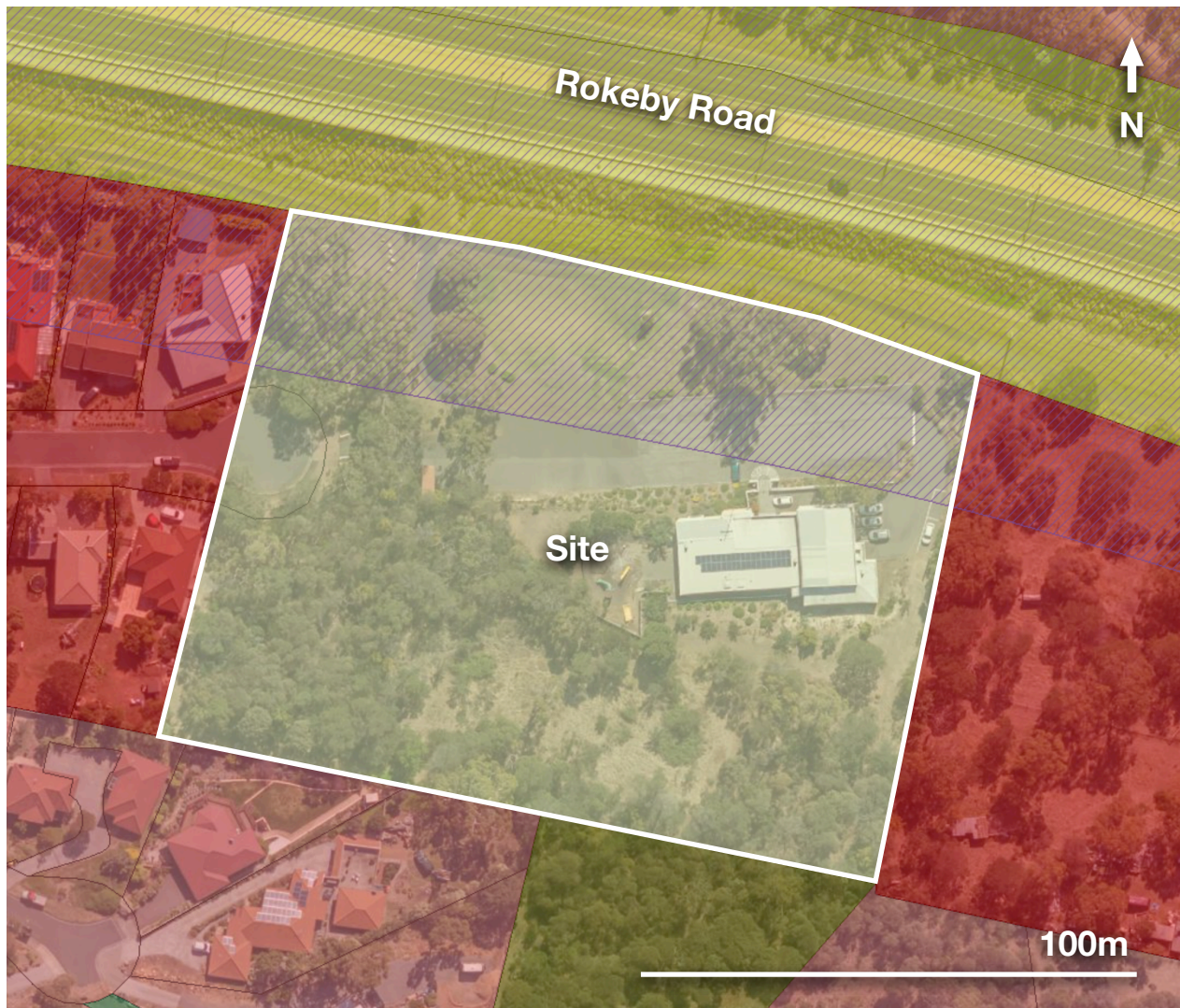


FIGURE 1.1: SITE AND SURROUNDING AREA

To the north of site is Rokeby Road, an 80km/h speed limited road that sees significant traffic volume. The associated Utilities zone is shown by the yellow overlay, with the purple hatching denoting the road and railway attenuation area.

Figure 1.2, below, shows the proposed development, comprising 7 residential lots with a balance lot (lot 8) to the site's north-east, with the existing church to remain.

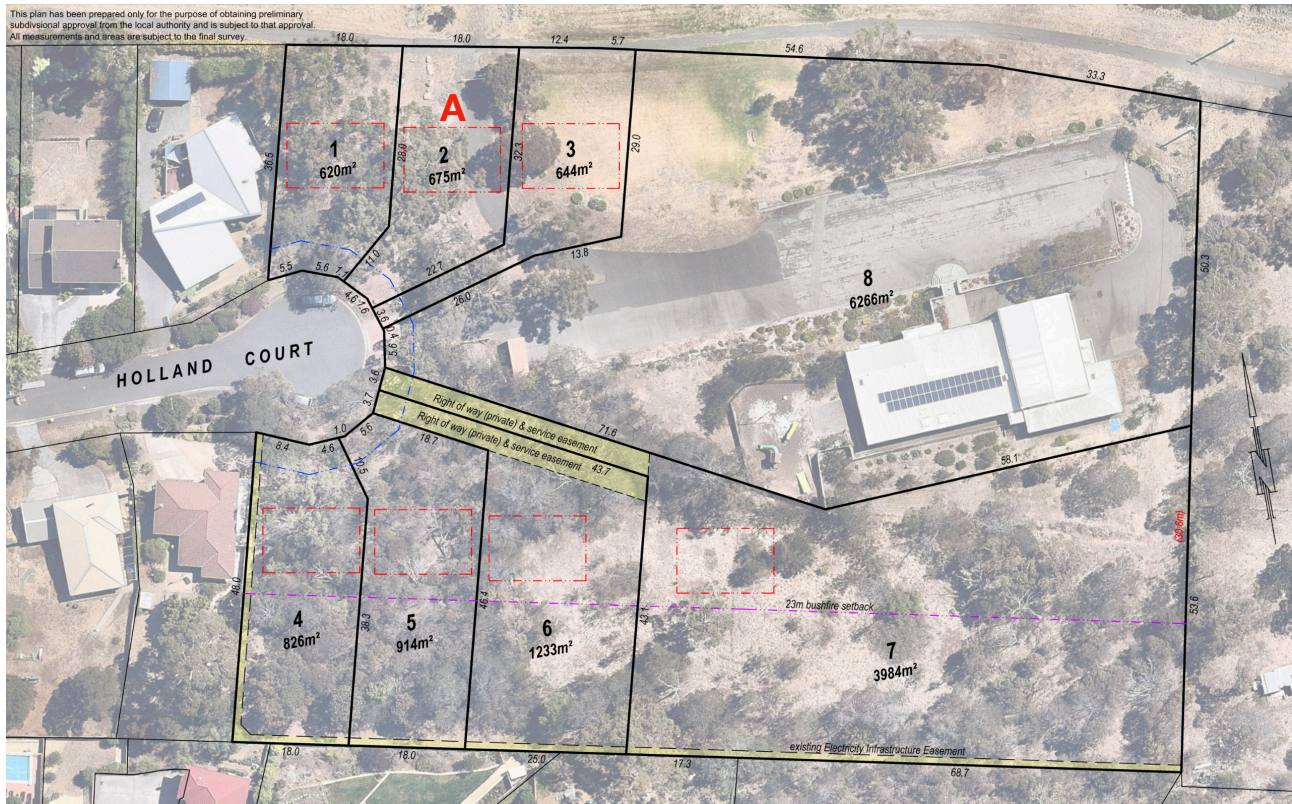


FIGURE 1.2: PROPOSED DEVELOPMENT

2. NOISE MEASUREMENTS

Noise measurements were conducted on an adjacent lot, to the east of site (38 Buckingham Drive, Howrah), over a 2 week period in September 2020, to quantify the existing traffic noise levels. The results of those measurements are summarised in Table 2.1 and Figure 2.1.

The sound level meter was located nominally 32m from the road verge for the measurements, with direct line of sight to the roadway. The microphone was at a similar or slightly higher height than the road surface, and thus fully exposed to traffic noise.

TABLE 2.1: EXISTING NOISE LEVELS

Time	Sound Pressure Level, dBA			
	L10	L90	Leq	L10 _{18hr}
Day, 0600 - 2200 hrs	64	52	61	66
Night, 2200 - 0600 hrs	55	39	52	

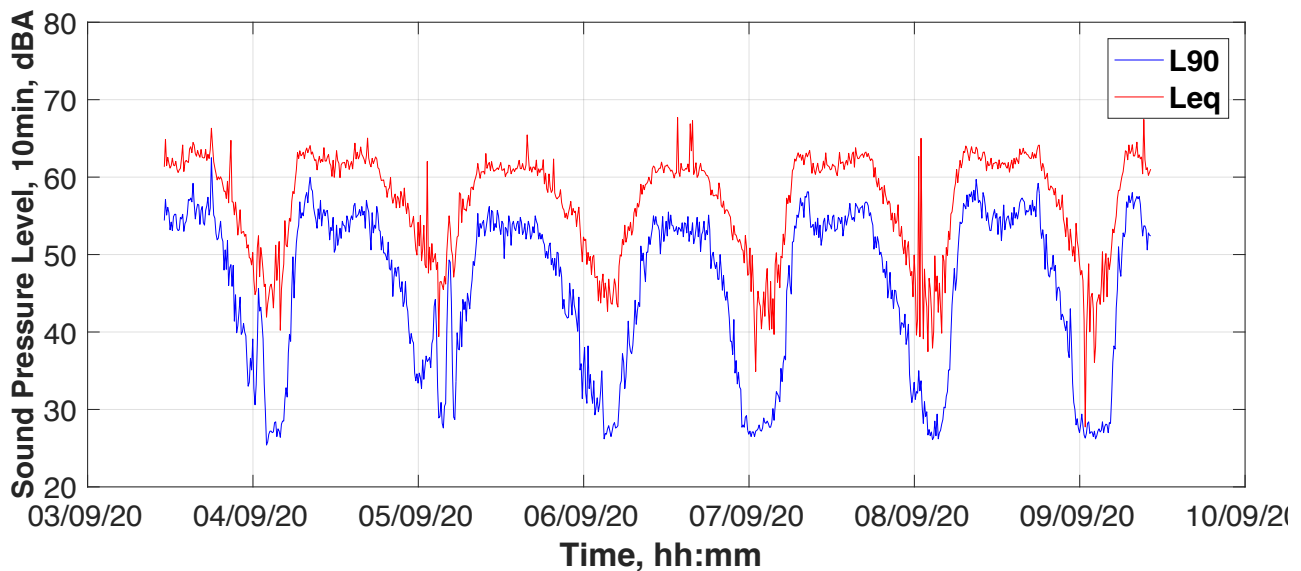


FIGURE 2.1: NOISE TREND - 38 BUCKINGHAM DRIVE

3. CRITERIA

Section C3.0 of the Tasmanian Planning Scheme - Clarence contains criteria for ‘*subdivision for sensitive uses within a road or railway attenuation area*’. With regards to noise for such a development, clause C3.7.1, reproduced below, is relevant.

Objective: To minimise the effects of noise, vibration, light and air emissions on lots for sensitive uses within a road or railway attenuation area, from existing and future major roads and the rail network.	
Acceptable Solutions A1 A lot, or a lot proposed in a plan of subdivision, intended for a sensitive use must have a building area for the sensitive use that is not within a road or railway attenuation area.	Performance Criteria P1 A lot, or a lot proposed in a plan of subdivision, intended for sensitive uses within a road or railway attenuation area, must be sited, designed or screened to minimise the effects of noise, vibration, light and air emissions from the existing or future major road or rail network, having regard to: <ul style="list-style-type: none"> (a) the topography of the site; (b) any buffers created by natural or other features; (c) the location of existing or proposed buildings on the site; (d) the frequency of use of the rail network; (e) the speed limit and traffic volume of the road; (f) any noise, vibration, light and air emissions from the rail network or road; (g) the nature of the road; (h) the nature of the intended uses; (i) the layout of the subdivision; (j) the need for the subdivision; (k) any traffic impact assessment; (l) any mitigating measures proposed; (m) any recommendations from a suitably qualified person for mitigation of noise; and (n) any advice received from the rail or road authority.

For lots within the attenuation area (lots 1 to 3), the Acceptable Solution is not satisfied, and thus the Performance Criteria (C3.7.1-P1) must be addressed.

In Table 1 of the Noise EPP¹, a list of Acoustic Environmental Indicator levels are given for which the environmental values specified in the Noise EPP “...*will be protected for the majority of the human population where the acoustic environment indicator levels are not exceeded*...” A section of that table is reproduced here in Table 3.1.

¹ Tasmanian Environmental Protection Policy (Noise) 2009 (the Noise EPP)

TABLE 3.1: ACOUSTIC ENVIRONMENTAL INDICATOR LEVELS - TAS. EPP

Specific Environment	Critical Health Effect	LAeq dBA	Time hrs	LAmx dBA
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate annoyance, daytime and evening	50	16	-
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

Given the data in Table 3.1, to preserve the future outdoor amenity of residential dwellings constructed on lots 1 to 3, a day time criterion of 55 dBA and a night time criterion of 45 dBA are deemed appropriate.

To ensure internal levels are sufficiently low, Australian Standard *AS3671:1989 Road Traffic Noise Intrusion - Building Siting and Construction* is referenced, which provides a method to determine what building construction is appropriate to protect the indoor amenity of the dwelling. The output from the standard is the sound isolation performance requirements of various building elements, stated as an Rw value.

In applying AS3671, the appropriate indoor ambient noise level must be specified, with AS2107² used as reference for this. For houses or apartments near major roads, the recommended internal ambient noise levels are specified as:

Living areas (day time)	35 – 45 dBA Leq
Sleeping areas (night time)	35 – 40 dBA Leq

Indoor noise levels of 40 dBA are then deemed appropriate for both day and night time periods for the various internal spaces of the dwellings.

Therefore, the adopted criteria, with which to satisfy C3.7.1-P1 is as follows:

Outdoor (day time)	55 dBA
Outdoor (night time)	45 dBA
Indoor (day and night time)	40 dBA

² AS/NZS 2107:2016 *Acoustics - Recommended design sound levels and reverberation times for building interiors*, Standards Australia, 2016.

4. NOISE PREDICTIONS

*iNoise*³ software has been used to construct an acoustic software model of the existing site and surroundings. The model implements the ISO9613 algorithms for environmental noise propagation. The predictions account for geometric divergence, topographical screening, atmospheric absorption, and ground absorption. The following comments are relevant to the model:

- The model was calibrated using the measured traffic noise level at 38 Buckingham Drive. The modelled predictions are within 0.5 dB of the measured data.
- Vehicle flows have been taken from a DSG traffic counter just west of the subdivision, deployed in May 2019. The flow data is summarised as:

Day time, one direction	624 vehicles/hr
Night time average flow, one direction	86 vehicles/hr
Average vehicle speed	70 km/h
Percentage heavy vehicles	8%

- Traffic on subsidiary roads has not been modelled, as this assessment is specific to the noise impact Rokeby Road will have on the proposed development.
- The ground has been assumed to have a ground factor of 0.4 (60% reflective) throughout the model.
- All barriers are modelled with a reflection factor of 0.8 (80% reflective).
- As per the Tasmanian Noise Measurement Procedures Manual, noise levels across the area are predicted at 1.2m above ground level.
- No proposed dwellings are included in the modelling.
- Noise levels are predicted at location A (see Figure 1.2) to provide a general representation of the noise levels at a possible future dwelling.

TABLE 4.1: SUMMARY OF PREDICTED NOISE LEVELS

	Sound Pressure Level, dBA	
	Day	Night
Location A	59	50

³ iNoise V2022.1 Pro, DGMR Software

5. RECOMMENDATIONS

The following mitigation measures are recommended to ensure the residential amenity of future residents is not impacted by noise from Rokeby Road:

- A barrier be constructed along the entire northern boundary of lots 1 to 3. The barrier requires the following specifications:
 - A minimum surface mass of 15kg/m². Examples of appropriate construction include 20mm thick ship-lapped timber, 12mm fixed cement sheet, or commercial noise barrier products.
 - A minimum height of 2m.
 - No gaps, including between the barrier and the ground.
- A façade construction with a minimum of Rw 30 on western, northern and eastern facing façades of future dwellings. Examples of such construction include:
 - 4mm float / 12mm air gap / 4mm float double glazing.
 - 90mm stud walls, internally lined with 10mm fixed plasterboard, and wall cavities filled with bulk insulation.
- Locate some outdoor habitable space on the southern side of any dwellings, such that the dwellings provide screening of the space from Rokeby Road.

6. ASSESSMENT

It is noted that only lots 1 to 3 are within the road and railway attenuation area, and thus this assessment and the associated recommendations and results are only relevant to those lots.

As seen by Table 4.1, predicted noise levels in the absence of a noise barrier are in exceedance of the day and night outdoor levels specified in section 3 by 4 and 5 dB respectively, and thus mitigation is required to demonstrate compliance. The recommended mitigation is a combination of a barrier, to provide screening, and facade construction requirements sufficient to ensure the internal levels are acceptable.

Following the implementation of the recommendations in section 5, the predicted external noise levels are 56dBA and 47dBA for the day and night respectively. The external levels are approximately 1-2dB over the criterion stated in section 3, and thus are deemed to be on the limit of acceptability for habitable outdoor space. It is noted that these levels are unlikely to be perceptibly different from the criteria of 55 and 45 dBA, and the proposed barrier requirements are at the limit of what is deemed practically feasible.

As stated in section 5, it is then recommended that some outdoor habitable space be located on the southern side of any future dwellings to provide additional screening from Rokeby Road.

Internal noise levels are predicted to comply with the criterion outlined in section 3 provided a façade with minimum Rw 30 is used, with section 5 providing examples of suitable construction.

Provided these recommendations are actioned, both external and internal areas are deemed to provide appropriate residential amenity regarding noise levels.

Therefore, following the implementation of the recommendations in section 5:

The proposed development at 30 Holland Court, Howrah, is deemed to satisfy clause C3.7.1 of the Tasmanian Planning Scheme - Clarence.

Should you have any queries, please do not hesitate to contact me directly.

Kind regards,



Bill Butler



Jaye Parry