

acoustic studio

Sally Munk
Principal Planning Officer
Department of Planning and Environment
c/o Urbis

6 November 2018

Dear Ms Munk

Proposed Macarthur Memorial Park, Varroville.

Response to Acoustic issues.

Thank you for your email of 16 October to David De Angelis and David Hoy in relation to concerns raised by the Department's noise expert, Jeff Parnell, and requesting:

- consideration of Jeff's comments, and;
- provision of a response that addresses the key points.

Further, your email:

- requires that consideration should be given to modifying the main site access to Access C (or Access D if more suitable), or other alternate access point, to avoid conflict with the Retreat, Church and Monastery;
- acknowledges that this may require a re-design of traffic flow within the development. Any modification to the site access must consider other potential land-use conflicts, such as with Varroville Homestead, and/or other environmental impacts.

This letter provides Acoustic Studio's response. It is largely qualitative, on the basis that this is appropriate and provides sufficiently useful information. In seeking clarity, where noise values are presented, they are presented simply as decibels (dB), rather than with their full technical descriptions (such as $dBL_{Aeq,15hour}$).

In preparing this response Acoustic Studio and the project team have thoroughly considered modifying the main site access, re-designing traffic flow within the development, and other potential land-use conflicts and environmental impacts.

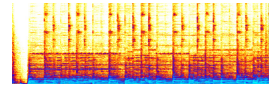
Re-design to halve traffic noise

Detail is provided below, but in summary we propose investigating re-design of the traffic flow within the development so that Access B is the primary entrance and Access C the primary exit. Signage and traffic flow directions within the site would

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direct vehicles to exit via Access C. This would effectively halve the number of vehicles passing the Retreat Centre, and the associated road traffic noise. According to noise theory this would result in a 3 decibel reduction. In practice the reduction would likely be greater because cars would be slowing as they approached the entrance, not accelerating out of it onto St Andrews Road. This reduction in road traffic noise levels would also apply to the Carmel of Mary and Joseph.

Halving of road traffic noise would be from the beginning of the project and in number terms would result in maximum predicted noise at the Retreat, as a result of traffic generated by the proposal, being reduced from 51dBA to 48dBA.

This proposal is subject to thorough analysis by the management team who would ultimately operate the cemetery, to ensure that it is viable, before a commitment can be made for its implementation.

Project Modifications Considered

The detail below summarises information provided to the Department in other project documentation, as it relates to acoustic considerations. The detail of this response by Acoustic Studio is in relation to the acoustic issues raised, but describes how other environmental factors have been considered, by experts in those fields, in the design to meet environmental objectives.

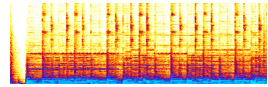
Project design consideration of acoustic objectives

Noise from road traffic on St Andrews Road as a result of the project is discussed below. Noise generated by activities within the site would be mainly from vehicles moving along internal access roads, funeral services, maintenance and operation including mowing and grave digging. In qualitative terms, based on a typical speed limit for internal access roads and observations from a viewing of the site and surrounds on 31 October 2018, noise from these activities is unlikely to be intrusive, and is likely to be inaudible most if not all of the time, at The Retreat Centre, Carmel of Mary and Joseph, Our Lady of Mount Carmel Church, and other existing buildings outside the site. This is also likely to be true for Varroville House, due to masking by noise from the Hume Motorway, which is estimated to create a constant background level of 50dBA daytime at the east, south and west sides of the house. The project design has been able to give more attention to heritage, ecological and scenic objectives because of minimal noise from activities within the site.

Project design consideration of scenic and heritage objectives.

Buildings associated with the project are, in accordance with the requirements of planning instruments and the desires of heritage authorities, located to the north of the site. This:

- preserves the scenic qualities of the landform to the south;



- maximises retention of the heritage values associated with Varroville House.

Project staging from north to south, over approximately 100 years, also meets these objectives. Internal access roads are also designed to meet these objectives, as well as requirements of the Rural Fire Service, and needing to be closely enough spaced to provide reasonable access for visitors across the site. Locating access to the north also meets the scenic and heritage objectives.

Project design ecological objectives.

Buildings associated with the project, access roads within the site, and site access, are designed to preserve the integrity of ecologically important, remnant Cumberland Plain Woodland and riparian vegetation through the middle of the site, and north of Varroville House.

Project design access objectives

Access to the site is designed to meet multiple objectives, including:

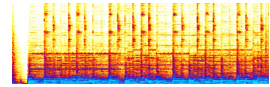
- preserving the scenic qualities of the landform to the south;
- maximising retention of the heritage values associated with Varroville House by minimising site traffic around it;
- preserving the integrity of Cumberland Plain Woodland and riparian vegetation;
- providing two public exit points for bushfire evacuations and emergency vehicle access, for each stage of development;
- ensuring the safety of traffic on St Andrews Road by having adequate sight distances.

Of the four possible access locations: A, B, C and D that meet all of these minimum requirements, access location B best satisfies the first two objectives. Access B was originally directly opposite one of the two entrance driveways of the Retreat but has subsequently been moved approximately 60m north.

Access B traffic noise does not exceed Road Traffic Noise Policy limits.

In summary:

- noise from existing traffic on St Andrews road is reported as 45dBA at the Retreat;
- the project will be staged, with usage increasing gradually: estimated demand is slightly more than 1 funeral per day average in 20 years' time;
- cumulative noise from existing, and future maximum project traffic, on St Andrews Road is predicted to be 51dBA at the Retreat;



- The NSW Road Traffic Noise Policy and its application notes require that any increase in total traffic noise should not be more than 2dB, where the existing noise level is within 2dB or greater than the relevant criterion. If assessed against a criterion of 50dBA for a place of worship or passive recreation, the existing level of 45dBA is not within 2dB. Therefore for this project, and that criterion, the Policy does not require the increase to be limited to 2dB.

Access B traffic noise can be reduced by half in consideration of the Retreat.

Predicted maximum road traffic noise at the Retreat, as a result of the project, is 1decibel above 50dBA. The Road Noise Policy requires that feasible and reasonable mitigation measures be identified to reduce the noise, to the criterion of 50dBA.

However:

- the Department recognises the Retreat as a significantly sensitive noise receiver that does not fit well with road noise guidelines; and,
- although the levels predicted are not high in absolute terms, the Department has indicated its expectation is for feasible and reasonable mitigation measure to be identified to minimise noise.

In response, the Project team has thoroughly considered modifying the main site access, re-designing traffic flow within the development, and other potential land-use conflicts and environmental impacts. Re-designing traffic flow within the development to make Access B the primary entrance, and Access C the primary exit, is identified as a measure that would effectively halve traffic noise at the Retreat.

In practice the reduction would likely be greater because cars would be slowing as they approached the entrance, not accelerating out of it onto St Andrews Road. This reduction in road traffic noise levels would apply from the beginning of the Project, and would also apply to the Carmel of Mary and Joseph.

This proposal is subject to thorough analysis by the management team who would ultimately operate the cemetery, to ensure that it is viable, before a commitment can be made for its implementation.

We trust this response satisfactorily addresses the Department's concerns and expectations. Please call if you would like further information or to discuss.

Yours sincerely

Larry Clark

Acoustic Specialist, Consultant