

Transport noise

Reverse sensitivity

NOISE BARRIER CASE STUDY 4



NZ TRANSPORT AGENCY
WAKA KOTAHI

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Combined bund and fence noise barrier at Rolleston

Subdivisions in Canterbury

Reverse sensitivity refers to the vulnerability of an established activity such as roading to objection from new sensitive land uses that locate nearby. For the NZ Transport Agency (NZTA), this means there is a risk that residents in new subdivisions created near established state highways may object to effects such as road-traffic noise.

The planners in the NZTA Christchurch Office have worked consistently to manage reverse sensitivity effects from new residential development

adjacent to state highways. Where development has gone ahead, specific controls have been put in place to mitigate road-traffic noise and reduce the likelihood of future complaints. Of key importance to these controls being implemented effectively is the relationship between the NZTA, the landowner/developer and the local authorities.

This case study examines the practical implementation of reverse sensitivity controls such as noise barriers in Canterbury, and reinforces key planning considerations from the *NZTA state highway noise barrier design guide*.

Noise barriers close to the road provide the best acoustics performance. However, any structures within the road reserve must be maintained by the NZTA. Therefore, where possible, noise bunds provided by subdivision developers for reverse sensitivity should be located on land that can be transferred to the council, which is generally best placed for ongoing maintenance.

Reverse sensitivity

The NZTA works in conjunction with local authorities to implement policies and rules in regional and district plans to help manage reverse sensitivity to road-traffic noise. The NZTA has been an active participant in the preparation of the Greater Christchurch Urban Development Strategy (UDS) and Canterbury Regional Policy Statement (RPS), as well as being a submitter on changes to the Christchurch City and Selwyn District Plans. Consequently, there are now various reverse sensitivity controls in these documents.

Before adequate council policies and rules existed in Canterbury, the NZTA also negotiated with developers at the subdivision consent stage to achieve appropriate outcomes. However, that approach does not always lead to a robust solution. Where this has been successful, a key step has been selling the benefits of the mitigation to the developer, in terms of improved noise environments in the new sections. This can be achieved by staff awareness of the NZTA policy and generating good relationships at an early stage with the developers.

Good relations with councils are also required to ensure that the NZTA is advised of proposed subdivisions, as notification may be limited. Where there is no access proposed to the state highway from the subdivision, the NZTA might not be considered an affected party if council planners are not already familiar with reverse sensitivity as a potential effect. Experience in Canterbury is that

ongoing communication between the NZTA and council is required to maintain an effective relationship, particularly with staff changes.

Selwyn District

The NZTA submitted on private plan changes within the Selwyn District which were seeking to rezone land. This has resulted in the inclusion of reverse sensitivity provisions, eg by SH1 in Rolleston where a 40 metre setback from the road and maximum noise levels in bedrooms are specified.

A current plan change to the Selwyn District Plan (2011) is now considering extension of these provisions to all land by state highways in townships. This case provides a good example of how the NZTA has been able to effect change through the progression of individual subdivision rules, leading to a strategic change.

NZTA Policy

The key controls that have been successfully implemented in Canterbury for many years are now part of the NZTA reverse sensitivity policy (2007, Appendix 5D, Transit Planning Policy Manual SP/M/001 www.nzta.govt.nz).

Reverse sensitivity controls are generally targeted at the most critical road-traffic noise effects such as sleep disturbance. There will often be residual effects such as state highway noise being the dominant noise in outdoor areas. Complaints to the NZTA may still occur, particularly if new residents expect a 'quiet' suburban area.



Location

Two examples of noise barriers by new subdivisions in Christchurch illustrate issues surrounding barrier location.

SH1 Johns Road

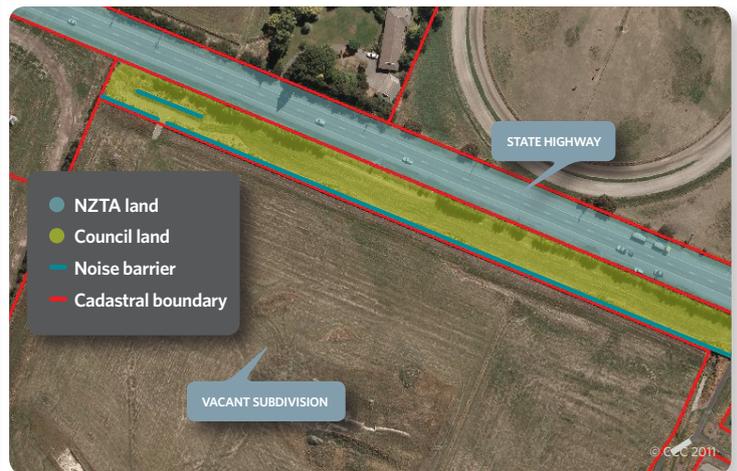
The figure to the left is an aerial photograph showing two stages of a subdivision by SH1 in Christchurch. For both subdivision stages a continuous noise barrier has been constructed by the state highway comprising an earth bund with a timber fence on top. In the first stage of the subdivision, shown on the top half of the figure, the barrier is located within individual sections within the subdivision. However, for the subsequent stage, shown on the bottom half of the figure, the barrier is on a specific council reserve.

The council is responsible for both sides of the barrier within the council reserve. However, where the barrier is located within individual sections, it is not obvious who will maintain the state highway side of the barrier. While it is the landowners' responsibility, the lack of direct access and varying ownership could result in an unsightly barrier viewed from the state highway. Fortunately, at this particular location the initial planting of appropriate species by the developer has meant minimal maintenance is required. This is a good example of the importance of landscape design for noise bunds.

However, in general it is recommended that noise barriers by state highways should not be within individual sections. Consideration should also be given to avoiding gaps between barriers on state highway land and section boundaries, which can become litter traps and hiding places.

SH73 Yaldhurst Road

In this second example shown in the aerial photograph below, a 20 metre wide council reserve has been created between a proposed subdivision and the state highway. The new noise barrier is located on the subdivision side of this reserve allowing for pedestrian/cycle and maintenance access on the state highway side. (There is also a discontinuous line of trees visible in the photograph by the state highway but these do not provide noise mitigation.)



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