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WAIMAKARIRI DISTRICT PLAN REVIEW – NOISE
DELIVERABLE 1 - GAP ANALYSIS

Rp 001 R01 20181370 | 26 February 2019



Project: **WAIMAKARIRI DISTRICT PLAN REVIEW – NOISE**

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1.0 INTRODUCTION

This report is intended as an overall review of issues which need to be addressed as part of a review of noise rules for the Waimakariri District. It forms Deliverable 1 as defined in the consultant agreement for the review project.

We have numbered most paragraphs in this report, to allow for easy reference when discussing issues amongst team members.

This revision of the report includes consideration of the comments received from Council staff by email on 1 February 2019.

2.0 REFERENCE DOCUMENTS

As part of this phase of our work, we have reviewed a number of documents. This report identifies any issues arising from these documents and makes recommendations as necessary. Some of these documents will need to be considered in greater detail in subsequent phases of this project.

2.1 Documents Received from Council

During the Request for Professional Services stage of this project, we received the following documents from Council:

- *Ground Borne Vibration Issues and Options Monitoring Report January 2013 For District Plan Review.docx*
- *Issues and Options Monitoring Report Noise and Vibration September 2012 For District Plan Review.docx*
- *Draft Section 32 Report Proposed Plan Change 37 District Plan Noise Limits in Health, Safety and Wellbeing Chapter.docx*
- *Plan Change 37 Outline of Amendments Draft December 2013.docx*
- *RC075615 Environment Court Decision North Canterbury Clay Target Association.pdf*
- *RC075615 Court of Appeal Decision NCCTA Clay Target Association.pdf*
- *Bird Scarer Gas Gun Controls Development Summary Feedback from Parties Involved Noise Chapter District Plan Review 11 September 2018.docx*
- *District Plan Effectiveness Findings Relating to Noise (Per Zone Grouping) Including Complaints.docx*
- *Noise Provisions Mapping Summary Plan Change 37 Provisions Current District Plan Provisions Gap Analysis District Plan Review 20 July 2018.docx*
- *180419042721 District Plan Review Request for Professional Services Nov 2018.pdf*

The following additional background documents were received from Council by email on 13 December 2018:

- *Noise District Plan Review DPR Chapter Draft.docx,*
- *Temporary Activities District Plan Review DPR Chapter Draft.docx,*
- *180615066587 Sport and Active Recreation Zone V4.pdf,*
- *180615066628 Open Space Zone V4.pdf,*
- *181127139035 Natural Open Space Zone V6 (Incorporating Coastal Open Space Precinct).pdf,*

- *Email to Marc Palmer Michael Baynes Steve Dunlop John Larsen Noise Indications Monitoring Results Bird Scarers 17 February 2017.*

We have also reviewed other documents, including:

- Draft rule for acoustic insulation for bedrooms in commercial areas, received by email on 18 December 2018,
- Draft maps indicating possible open space zoning, received by email 14 December 2018,
- Operative online District Plan and maps.

3.0 METHODOLOGY

Our methodology for this stage of the review project has broadly involved three aspects:

1. **An initial meeting with members of the Core Project Team:**

During this meeting, we discussed a number of noise-related issues, and this gave us an early indication of the direction which Council intends for the District Plan review.

2. **A detailed review of existing documentation:**

This has included the noise chapter of the Operative District Plan, and the background documents listed in section 2.0 above. In addition, we have sourced several reports from Marshall Day Acoustics' project archives to assist with establishing a history of ambient noise monitoring in the Waimakariri district.

3. **Inspections of the main business centres in the district as this is where zone boundary noise conflicts typically occur:**

This primarily involved Rangiora, Kaiapoi, and Woodend. The aim of our survey was to gain an understanding of the type of noise generating activities which exist in the main business zones, and to determine whether there are any specific zone interfaces where potential noise issues could arise.

4.0 IDENTIFIED GAPS

In the following sections, we have highlighted gaps and further points for consideration within the operative noise rules, draft noise chapter and other relevant documentation.

4.1 Operative Noise Rules

From our review of the operative noise rules, and our experience using them as part of various resource consent applications, we have identified a number of gaps that are discussed below. Council have already addressed several of these in the “draft chapter” (section 4.2), and in these cases, we have noted these gaps as being “*addressed in draft*”.

- 4.1.1 The reference to New Zealand Standards NZS 6801 and NZS 6802, need to be updated to the 2008 versions. *Addressed in draft.*
- 4.1.2 Similarly, L_{10} needs to be updated to L_{eq} . *Addressed in draft.*
- 4.1.3 Various hours are used to denote daytime and night-time in the rules, depending on the zone generating noise. In our view, this is unnecessarily complicated, and may lead to conflicts in some situations.
- 4.1.4 Rule 31.12.1.2 limits the level of noise within residential and rural zones. However, this rule is at risk of being overlooked in favour of later rules which specifically apply to the zone in which the noise is being generated (e.g.: 31.12.1.7 to 31.12.1.9). In our view, all noise rules need to be contained in one concise table which emphasises the zone receiving noise, not the zone producing it.
- 4.1.5 The operative noise rules for the *Business 3* zone are structured in recognition of there currently being only one site in the district within this zone — the MDF plant at Ashley. As a result, there is no general noise limit applicable within a rural site adjoining this zone. Council may wish to consider making this rule more generic, to allow for the possibility that other similar industrial uses seek to zone additional land *Business 3* in the future. Care would obviously have to be taken with this approach to ensure that changes did not inadvertently affect the existing site.
- 4.1.6 There is currently no mechanism in the plan to protect the *Business 3* zone from reverse sensitivity issues and complaints arising from future development in the surrounding *Rural* zone. We consider this to be important, particularly in light of the North Canterbury Clay Target Association decisions (see 4.8.2). In the absence of such a mechanism, new dwellings in close proximity to the zone could have serious implications for the operation of the MDF plant. We recommend development of a buffer zone or noise contours around the zone for this purpose.
- 4.1.7 There are currently two rules for aircraft noise (31.12.1.4 and 31.12.1.5). These two rules are identical except that one relates to proposed dwelling houses and the other to additions to existing dwelling houses. In our view, it would be a simple matter to combine these two rules into one.
- 4.1.8 Aircraft noise contours around Christchurch International Airport are updated from time to time to reflect latest noise monitoring and modelling. We recommend that CIAL¹ are consulted during the plan review to ensure that the latest noise contours are used. CIAL may also have views on the wording of the rules, based on their extensive experience in Christchurch City.
- 4.1.9 There are currently two rules which apply to the *Business 2* zone (31.12.1.7 and 31.12.1.8). We find this confusing and should be reviewed.
- 4.1.10 Rule 31.12.1.9 includes “...the site emitting the noise...” within the sites where noise effects are to be assessed. In our view, this is non-sensical, and should be reviewed.

¹ Christchurch International Airport Limited

- 4.1.11 There is currently no limit on how much noise the Business 6 zone can generate within the adjoining *Business 2* zone. Although the Business 2 zone is not particularly noise-sensitive, we do not consider it appropriate to allow unlimited noise from another site.
- 4.1.12 The operative rules include a number of rules relating to noise from earthquake recovery activities. Many of these rules are similar to the general noise rules, and may therefore be superfluous. In addition, we question whether these rules have been necessary to date, and/or whether there is still sufficient rebuilding happening to require them to continue.
- 4.1.13 The New Zealand construction noise standard has been revised since the provisional 1984 version referenced. *Partly addressed in draft.*
- 4.1.14 The helicopter noise rules (31.12.1.14 and 31.12.1.15) need to be updated and reviewed. In our experience, the Pa²s units are no longer used, and only the L_{dn} limits are required.
- 4.1.15 The only reverse sensitivity rules relating to traffic noise relate to the North Woodend Outline Development Plan Area (rule 31.12.1.16). We recommend considering a more general reverse sensitivity rule applying to sensitive properties close to high traffic volume roads in the district. Addressed in draft. There will need to be a clear hierarchy of roads in the district to ensure this rule is applied appropriately.
- 4.1.16 There are currently no noise rules restricting development of new houses close to rail lines. We recommend this is addressed.
- 4.1.17 The current exemption for agricultural activities (31.12.2.1) is worded in such a way that activities such as frost fans do not have to comply with any noise rules. We recommend a detailed review of this rule. This has been identified as needing to be addressed in the draft chapter.
- 4.1.18 Similarly, rule 31.12.2.2 exempts military training activities from the general noise rules. Whilst we agree this is appropriate, there are currently no noise rules controlling military activities. *Addressed in draft.*
- 4.1.19 We agree with the intent of rule 31.12.2.3 which allows a limited number of helicopter movements associated with short duration events. However, this rule currently allows such movements to occur at any time of day, and it is ambiguous as to whether "...within any six month term..." applies to each event or to any one site. Care needs to be taken in drafting helicopter noise rules because the New Zealand helicopter noise standard NZS 6807 is not intended to apply to landing sites with fewer than 10 movements in any month.
- 4.1.20 Rule 31.12.2.4 exempts the West Kaiapoi Arterial Road from complying with the general noise rules. Our staff have recently had to consider this issue for clients who interpreted this exemption to mean that other roads are not exempted. It is also our view that all public roads should be exempt from general noise rules. The effects of road traffic noise is appropriately dealt with by NZS 6806, and roads are not in themselves sensitive to noise. In addition, no site can ever fully comply with a rule if it applies at the property entrance, because one vehicle crossing the boundary would exceed any noise rule. *Partly addressed in draft.*
- 4.1.21 We recommend a review of the matters of discretion listed in rule 31.13.1. As an example, the first matter implies that the noise limits which apply to permitted activities are appropriate for any other resource consent application. In our view, this is not necessarily the case. *Mostly addressed in draft by virtue of revised format.*

4.2 Draft Noise Chapter

In addition to the gaps identified in the Operative Noise Rules, we note the following gaps and issues in the draft noise chapter (Version V4 JM 18 Oct).

4.2.1 We have some suggestions regarding the wording of the introduction. In particular:

For instance, people may have a different tolerance for loud transient noise as compared with a quieter but more continuous noise, depending on the circumstances. In most situations occasional noise is tolerated at much higher levels than continuous noise. Separate noise standards have been drafted for temporary activities to recognise this, and give effect to the objectives and policies for temporary activities.

In our view, the word “much” is inappropriate and should be deleted.

The predicted aircraft noise contour is used to assess the appropriateness of residential developments subject to the noise from aircraft using Christchurch International Airport.

The word “aircraft” clarifies what contour is being discussed. We also note that there may be a need for more than one contour. See our later comments.

All sound levels shall be measured and assessed in accordance with the provisions of NZS 6801: 2008 “Acoustics- Measurement of environmental sound” and NZS 6802: 2008 “Acoustics- Environmental noise”.

As noted by another reviewer of the draft chapter, this should be a rule, not a comment in the introduction.

- 4.2.2 Item “e” in the “How to interpret and apply the rules” section says that noise from motorised craft is addressed in the Activities on the surface of water section, which we have not yet seen. As discussed in our initial meeting, we recommend having clear cross-references in the noise chapter to any rules which relate to noise elsewhere in the District Plan.
- 4.2.3 Draft rule NL-R4 addresses noise from audible bird scaring devices. Whilst we agree with its inclusion, we believe that some work still needs to be done on the details of the rule.
- 4.2.4 Similarly, some more work is required on military training noise rules (NL-R5).
- 4.2.5 Draft rule NL-R6 addresses residential development within the 55 dB aircraft noise contour. However, we note that with only the 50, 55 and 65 dB contours shown, it is very difficult to determine the noise exposure of individual properties which are exposed to noise between 55 and 65 dB. To simplify this task, we recommend adding intermediate noise contours, ideally at 1 dB increments. Likewise, the rules refer to SEL noise contours which currently don’t exist, and again, more than one contour is necessary to enable “...linear interpolation...” to occur.
- 4.2.6 The New Zealand aircraft noise standard recommends land use planning controls to limit future residential development within specific aircraft noise contours. Operative policy 18.1.1.1 is in line with this recommendation. We support this policy.
- 4.2.7 The use of the West Kaiapoi arterial road has a proposed permitted activity status. This could imply that other roads do not. As previously discussed (Section 4.1.15), we believe that all roads should be exempt from general noise rules.
- 4.2.8 There is a placeholder exemption for noise from “...farming or any agricultural activity...”. In our view, some work still needs to be done on the wording of this paragraph.
- 4.2.9 Frost fans are currently included in the placeholder discussed above. We do not consider this appropriate, and recommend that there is a specific noise rule or provision for frost fans.

- 4.2.10 There is also a draft exemption for “...dwellings which exist on the same site as a noise source being assessed...”. It is likely that this will be redundant, depending on the wording of the final noise rules.
- 4.2.11 The draft chapter lists a range of activities which may need noise standards. Our view on this list is as follows.
- *Commercial firewood processing*: This is a very specific description, which may result in loopholes. However, in concept, we agree that the activity needs to be addressed in some manner;
 - *Dog boarding kennels (including dog daycare)*: Agreed;
 - *Gun Clubs (to include shooting ranges)*: Agreed;
 - *Motorised vehicles (etc.)*: Agreed. May be partly addressed through rules for Woodford Glen as already discussed. This rule should also address noise from motorised watercraft such as jetboats, even if only by way of a cross-reference to other rules (see 4.2.2);
 - *Quarries*: We generally disagree with this. In our experience, Quarries in Canterbury can and should comply with general noise rules. The only issue which may need to be considered with respect to quarries is noise from blasting. Canterbury quarries are generally extracting river gravels and blasting is not required. However, if there are any opportunities for hard rock quarries in the district, it would be appropriate to add a rule regarding blasting noise;
 - *Vibration from earthworks*: In our experience, vibration almost never results in problems that can't be captured by appropriate noise rules. In addition, the RMA includes vibration under the definition of noise, and hence the control of vibration can always be addressed in accordance with sections 31 and 74 of the Act. Furthermore, vibration is very difficult and expensive to predict and monitor, and we therefore prefer to avoid vibration rules where possible. Further thought is required on this issue. The Draft National Planning Standard does not mandate vibration rules, it only requires that any rules relating to vibration be based on DIN 4150-3;
 - *Frost fans*: Agreed. However, as noted in 4.2.9, there is currently an exemption that includes these, and care therefore needs to be taken to avoid a conflict between rules;
 - *Aircraft and jetpacks*: Agreed. Care needs to be taken to differentiate this rule from those already addressing noise from Christchurch International Airport.
- 4.2.12 Temporary Activities. We agree that there may be a need for specific noise rules for some specific locations. This will depend to some extent on the form of the proposed Open Space zones. In addition, we will need to review the appropriateness of the drafted permitted activity standard in light of the scale and location of sites within each of the Open Space zones.
- 4.2.13 We do not consider it advisable having “Other activities” at NL-R14. In our view, almost all noise will be covered by the general noise standards listed in this rule, and this should therefore be the first noise rule rather than the last. All other standards can then be exceptions or exemptions to these rules.
- 4.2.14 For the “Other activities” rule, we propose to discuss the “activity status when compliance is not achieved” with Council. Our concern is that the effects of noise at 80 dBA (for example) would be quite different to those at 60 dBA, yet under the draft wording, both sources would be assessed as being restricted discretionary. We recommend considering a staged approach, with a different status for noise levels up to 10 dB above the permitted standard versus noise of more than 10 dB above. This approach has worked well in Christchurch for many years.
- 4.2.15 We recommend a complete reformatting and refocussing of *Table 1: Noise limits—zone specific*. At present, the focus is on the zone where the noise is **produced**, whereas the effect of that noise is dependent on the zone in which the noise is **received**. In our experience, this results in confusion,

with noise producers being of the belief that they can produce quite high levels of noise, even when they are located very close to sensitive receivers such as residential dwellings.

- 4.2.16 We are also concerned that the current format of rules explicitly states which zones the noise rules apply to for each zone producing noise. This approach inevitably results in loopholes where specific sites are not protected from nearby noise because their zone has not been included in the rules. If the rules are reformatted to focus on receiving zones, these loopholes disappear.
- 4.2.17 We consider it confusing to have varying hours specified for noise rules in different zones. As with our discussion in 4.2.15 above, confusion can arise when, for example, a business zone has noise rules that apply 24 hours per day, yet the receiving zone may be a residential zone with separate daytime and night-time limits.
- 4.2.18 Construction Noise. The draft includes a table of limits for construction noise, but as yet there is no accompanying rule. Our concern is that this table is taken directly from the Construction Noise Standard (NZS 6803), which focusses on best practice rather than only complying with the numeric limits. We suggest considering a much simpler table as a permitted activity standard. The Standard, and hence the detailed table, could then be used as part of an assessment of effects if/when an applicant had to apply for a resource consent.
- 4.2.19 Matters of Discretion NL-MD1. We agree with one reviewer's comments on the draft chapter, that the items listed under "noise" are very specific and may miss something important. We suggest considering more generic matters.
- 4.2.20 We have concerns over the Matters of Discretion given in NL-MD3 in regards to aircraft noise.
- Item "a" doesn't make sense. The implication is that a dwelling may be used for an activity that is not as sensitive to noise as residential activities. Surely if this was the case, it would no longer be a dwelling? In addition, this matter is limited to "...around the dwelling...", whereas the noise rules apply limits to a range of building uses;
 - Item "b" suggests that an applicant could argue that the activity around their site is somehow less sensitive than other similar activities. In our view, the "...timing and type..." of activities are already considered within the range of activities to which noise limits apply; and
 - Item "c" says that "...measures to mitigate aircraft noise..." should be a matter of discretion. In our view, such mitigation measures are necessary to comply with the indoor noise limits, and should therefore not be discretionary.

4.3 Gaps Identified by The Core Project Team

We have reviewed the gaps identified by the project team, as outlined in section 2.1 of the Request for Professional Services document.

Almost all of these issues have been identified in our review of the operative and draft chapters. For completeness, those which have not already been discussed are:

- Heat pumps. We agree that this is an issue which needs consideration.
- Construction vibration. We have already discussed vibration at paragraph 4.2.11. Although our comments were not specifically focussed on construction, our view is the same. We are not satisfied that there is any need to have specific rules to address vibration from construction. We would be happy to discuss this further with Council.

4.4 Plan Change 37

Plan Change 37 proposes a number of changes to policies and rules relating to noise. Our initial review suggests that most of the issues arising from this plan change have been captured in the draft noise chapter. This plan change may need to be reviewed in more detail at a later stage.

4.5 Bedrooms in Commercial Zones

- 4.5.1 Council have drafted a rule for Commercial Zones requiring bedrooms to achieve a reasonable level of sound insulation. In concept, we agree with this rule.
- 4.5.2 Sound insulation rules such as this assume that businesses in the area comply with the relevant noise rules within the zone. This overlooks the likelihood that businesses occasionally apply for a discretionary consent to exceed the noise limits. The presence of residential accommodation nearby can prevent this from happening. We therefore consider it important to only permit residential accommodation in commercial and light industrial areas, not areas where heavy/noisy industry are permitted.
- 4.5.3 Some additional work may be required on the wording of the proposed rule.

4.6 Open Space Zones

From the preliminary information supplied to us, there are likely to be three open space zones. At this stage, we do not know sufficient detail to make detailed comments. However, it may be appropriate to consider applying stringent noise rules for remote open space areas if Council wishes to discourage development in these areas. Similarly, small suburban parks are not particularly sensitive to noise, and the noise rules applying to these areas could therefore be slightly more lenient than for residential areas.

4.7 Other Specific Noise Sources

Based on our experience in other districts, there are a small number of other specific sources of noise which have not been addressed to date.

4.7.1 Wind Turbines

The draft Utilities chapter proposes a permitted activity standard for small scale wind turbines. We are happy with this in concept, and will review the specific wording of the noise aspects of this at a later stage. We recommend that the noise chapter includes a specific cross-reference to the Utilities chapter to ensure that consultants do not inadvertently overlook noise from wind turbines.

We also recommend that specific mention is made of large scale wind turbines, either by specific noise rules, or by making them a discretionary activity to be assessed under NZS 6808.

4.7.2 Wedding and Function Venues

We are aware of several wedding venues which have been established in rural areas, both in Waimakariri and surrounding districts. These can result in noise complaints because of late night music. As such, we recommend addressing these (and similar activities) in the noise rules.

4.7.3 Motorbikes

This may be captured within the proposed "...motorised vehicle..." rule. However, we have dealt with several instances where owners of lifestyle blocks establish what amounts to a permanent motorcross track, with resulting noise issues. We therefore recommend specific mention of this issue.

4.7.4 Chainsaws

This may be addressed within what is currently showing as "...commercial firewood processing...". We consider it important to differentiate between the right of landowners to use chainsaws on their property, and the effects which can result if those chainsaws are used frequently as part of a commercial activity.

4.7.5 Emergency Generators

In our view, emergency generators are a special case with respect to noise. Provided they are only used in times of emergencies, and they are only tested during daytime hours, we are satisfied that compliance with daytime noise limits is appropriate. On rare occasions when these generators

operate at night, it is generally for short periods of time during an emergency, and some minor noise effects are acceptable.

4.7.6 *Pubs and Clubs*

In large cities, it is often useful to make specific provisions for an entertainment zone in the city centre to accommodate pubs and nightclubs. In our view, this is not required in the Waimakariri District. We are satisfied that the central city business zone in Rangiora is appropriate to allow pubs and clubs to operate because the core of this zone is reasonably well separated from any residential dwellings. However, we recommend that residential development within this zone is strongly discouraged, because any such development would make it extremely difficult for a pub or nightclub to operate successfully without adverse noise effects. If residential development is allowed in the *Business 2* zone, we recommend including façade sound insulation rules for bedrooms, along the lines of the draft rule received from Council (see 4.5).

4.7.7 *Schools*

We understand that Schools are likely to be designated by the Ministry of Education for education purposes, with an underlying zone of the area surrounding each school. As such, the noise rules applicable to schools would be those of the underlying zone.

We are generally happy with this approach, although we are aware that the Ministry of Education strongly argues for 55/45 dB noise rules for all schools, which may not be consistent with residential/rural zones where schools are located. We will therefore need to consider noise rules for schools in more detail at a later stage.

4.7.8 *Rangiora Airfield*

There are currently no rules to control noise from the Rangiora Airfield, nor rules to restrict residential development in close proximity to it. Council are currently working with Marshall Day Acoustics on this issue, and the resulting rules should be implemented in the revised District Plan.

4.8 Issues Arising from North Canterbury Clay Target Association

There are two important issues arising from the Court decisions in the matter of the North Canterbury Clay Target Associate (NCCTA).

4.8.1 Broad application of standards such as NZS 6802 can inadvertently result in unintended consequences. In the case of the Gun Club, the Environment Court found that the operative plan rules require an assessment of noise in accordance with NZS 6802, and that this assessment applies to gunshot noise even though the standard itself suggests that it is not appropriate. This ruling highlights the importance of having rules which specifically identify noise sources which require assessments that fall outside the scope of the primary acoustic standards.

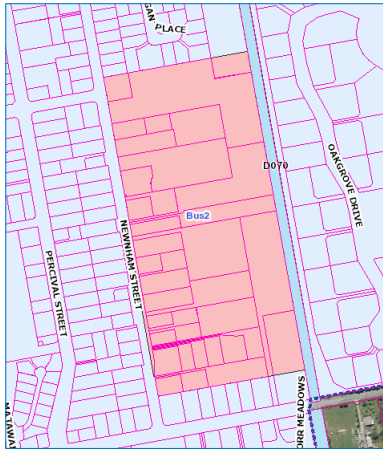

4.8.2 The Environment Court also ruled that compliance with noise limits at the notional boundary of a dwelling house in a rural zone means any notional boundary that may exist from time to time. The Court of Appeal upheld this view. In other words, if a new dwelling is constructed after a noise producing activity is lawfully established, that activity must comply with the relevant noise limits at that new dwelling. This issue must be carefully considered when preparing noise rules which utilise notional boundaries.

4.9 Existing Zone Interface Issues

From our survey of the main business centres, we have identified the following issues which may require additional considerations.

4.9.1 Business 2 zone

Overall, we are concerned that the *Business 2* zone allows for a wide range of noise generating activities, including some which we do not consider appropriate for sites which are close to residential areas. The current *Business 2* zone includes areas with activities which we consider to be reasonably noisy, including sawmills, concrete batching, and scrap metal processing. Other *Business 2* areas are more benign with respect to noise. Specific comments regarding several of the district's *Business 2* zones are provided below:

Business 2 zone description	Location
<p>Newnham Street, Rangiora: This area mostly consists of long established industrial uses, including a hire company, panelbeaters and vehicle servicing. In the eastern part of the zone, there are several large sites, some of which appear to be used for outdoor storage.</p> <p>The zone is completely surrounded by developed residential land. All access to industrial properties is along Newnham St, which has houses on its western flank. With respect to noise, this area is best suited to relatively quiet activities which do not generate high traffic volumes</p>	<p>Figure 1: Newnham St</p> 
<p>Southbrook, Rangiora: This is easily the largest business zone in the district. Businesses in this area range include a supermarket, Mitre10, BP petrol station, landscaping supplies, numerous large format retail outlets, a sawmill, and the Council run refuse transfer station.</p> <p>The zone is bounded to the north by a residential zone, and by rural land in almost every other direction. A large area of the zone in the southwest corner is currently undeveloped rural land</p>	<p>Figure 2: Southbrook</p> 

Business 2 zone description

Location

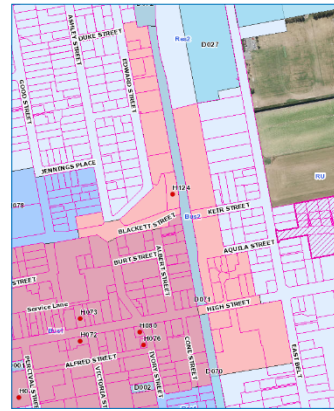
Central Rangiora:

Immediately east of the central business district lies a thin sliver of *Business 2* land straddling the railway line.

Many of the businesses in this zone are large format retail, including new developments around The Warehouse in the southeast corner of the zone. At the northern end of the zone is a large site occupied by Waters and Farr, a manufacturer of polypropylene and polyethylene pipes.

Much of the zone directly adjoins residential zoned land.

Figure 3: Central Rangiora



Ravenswood:

There is an area of *Business 2* zoned land at the northern end of the new Ravenswood subdivision, near the state highway roundabout which also services Pegasus Town.

The only businesses in this zone at present are a BP service station and a McDonalds.

The zone is completely surrounded by residential and rural land.

Figure 4: Ravenswood



Kaiapoi Mill area:

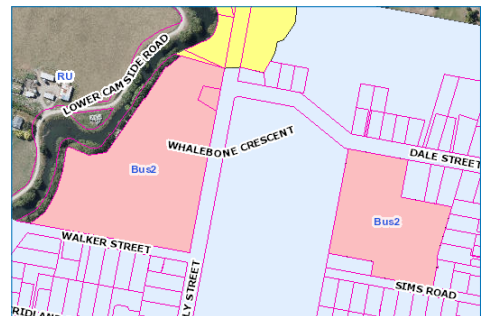
The Kaiapoi Mill zone is mostly occupied by old commercial buildings which border the road frontage. As a result, most businesses in this area are located within buildings.

There is currently a kitchen manufacturing business within the buildings, and a scaffolding yard at the south end of the zone.

A secondary *Business 2* zone to the east of the Mill site is largely occupied by Sutton Tools (previously known as Patience and Nicholson), manufacturing drill bits. Some of the land within this zone has access from Sims Road—a small no-exit street unsuitable for heavy vehicles. Whilst there doesn't currently appear to be any business access from Sims Road, we are concerned about the effect this would have on established residences if it arose in the future.

Both these areas of *Business 2* land are surrounded by residential and/or rural land. There is one dwelling located within the Kaiapoi Mill area.

Figure 5: Kaiapoi Mill



Business 2 zone description

Location

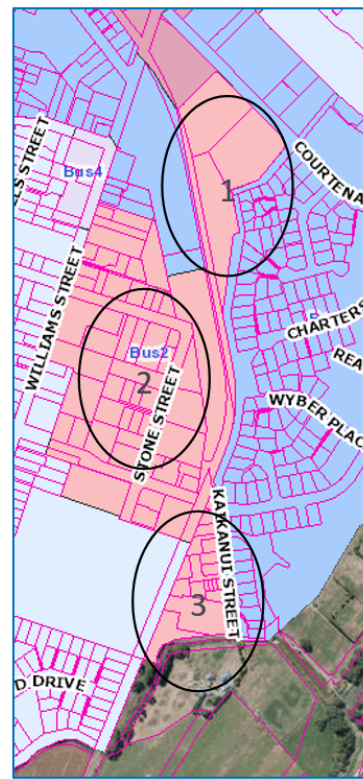
South Kaiapoi:

The northern segment of this zone (area 1 at right) accommodates a Countdown supermarket, a self-store storage facility, and large cool stores. None of these businesses are particularly noisy. This area is mostly surrounded by residential land, although the land to the northeast has been cleared of houses since the earthquakes.

The central part of this zone (area 2 at right) contains a wide range of activities, ranging from car sales yards to vehicle servicing and repairs, a sawmill, and a scrap metal business. We would describe many of the businesses in this area as being reasonably noisy, and not ideally suited to an area bordering residential dwellings. A large retirement complex borders this area to the north.

The southern part of this zone (area 3 at right) is accessed from Kaikanui Street, a short no-exit street with houses on its eastern side. The businesses in this area are mostly commercial offices and warehousing. There is currently one large undeveloped site at the southernmost tip of this area which is advertised as being available for lease or development.

Figure 6: South Kaiapoi



In our view, the operative noise rules are confusing. While rule 31.12.1.2 restricts noise within a residential zone to 50 dB daytime and 40 dB night-time, rule 31.12.1.7 purports to allow 65 dB at all times “...at any point beyond any Business 1 or 2 Zone site boundary...”, which in many cases includes residential land. The residential rule (50/40 dB) is appropriate for residential areas, whereas the 65 dB business zone rule is not. Our concern is that some of the noisier industries, such as sawmills, will not be able to comply with a 50 dB daytime noise rule because of the close proximity of residential zoned land. In our view, it would be better to split the existing *Business 2* land into two separate zones to better reflect their current use and send a signal that future use should remain consistent with the current use. Such an approach may also allow buffer zones to be created, and/or rules put in place to control future development at the interface between business and residential/rural land.

4.9.2 Business 6 zone

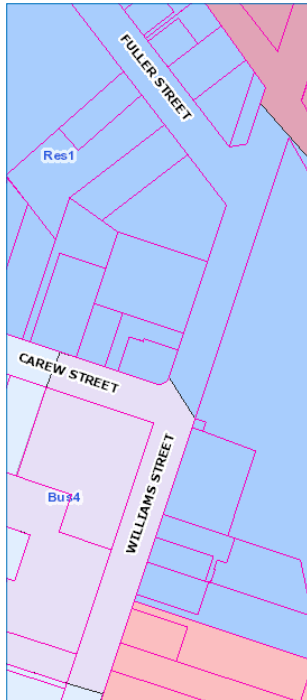
As far as we can ascertain, there is only one parcel of land zoned *Business 6*. It is located immediately to the south of the Southbrook *Business 2* zone (see Figure 2). It is currently used for rural farming activities. Policy 16.1.1.11 states that this zone is created to accommodate a “...museum, wedding venue, tavern and conference facility... associated non-permanent accommodation [and]...(d)...associated retail...”. In our view, the existing 65 dB noise limit within the zone sends a message that this zone allows for fairly noisy activities, which could then result in offsite noise effects in the surrounding rural land.

4.9.3 Kaiapoi Business 4 zone

The *Business 4* zone on Williams St, south of the main shopping precinct contains a mix of restaurants

and commercial/retail outlets. However, very similar businesses continue north of the zone between Carew Street and Fuller Street (see Figure 7) but are zoned *Residential 1*. Council may wish to revisit the zoning in this area to better reflect established usage. Appropriate noise limits would need to be considered.

Figure 7: Kaiapoi Business 4



4.10 Cross-District Issues

- 4.10.1 One loophole in many District Plans is that noise generated within the District may have effects in a neighbouring district, and there are no controlling noise rules. This is possible in Waimakariri, with noise sources such as Woodford Glen which is very close to the District boundary. We recommend specific consideration of this issue in the revised Plan.

5.0 AMBIENT NOISE MONITORING

5.1 Discussion

Before reviewing ambient noise levels in the area, it is worth considering the purpose of noise standards in a District Plan.

In our view, noise rules are designed to provide a level of amenity consistent with the intended use of a particular zone. Hence, noise limits in residential areas should give a comfortable outdoor living environment during the day, and a pleasant sleeping environment at night. As such, there are good arguments for noise limits being consistent throughout all residential zones in New Zealand, with the exception of specifically identified areas such as central cities and/or high density residential zones.

In business/industrial zones, noise standards are necessary to provide a degree of noise control, such that neighbouring businesses can operate successfully without significant disruption. As an example, telephone communication within an office can be impeded if the level of noise from a neighbouring site is unreasonably high.

On this basis, ambient noise levels are only important when they identify an area which is unusually noisy. It is not appropriate to set very stringent noise limits in a business zone just because that zone happens to be very quiet—all greenfields business zones start out being very quiet. Our review of ambient noise monitoring data has therefore concentrated on how typical noise levels are in particular areas, and/or identifying specific sites where more data is required.

5.2 Council Monitoring

The *Issues and Options Monitoring Report* provided by Council gives a general summary of noise monitoring in 2004, 2009/10, and 2013. As far as we can tell, this monitoring is intended to give an indication of the noise environment in general areas of the district, not those affected by any specific noise source.

Ambient noise levels (L_{A10} and L_{Aeq}) in general areas are highly influenced by traffic noise, and at times this can be misleading. Monitoring is generally undertaken at the road boundary of a property for convenience, and this will clearly be the noisiest part of a site. Away from the road, noise levels will reduce significantly. As a result, it is often more informative to review the background (L_{A90} or L_{A95}) noise levels, because these indicate what the ambient noise level is during the quiet times when there are no vehicles passing the site.

Of particular interest to us are results relevant to residential areas. In the 2013 survey, there are five areas which fulfil this function:

- Sovereign/Monarch Boulevard Reserve, within the Sovereign Palms residential area, North Kaiapoi,
- Ashgrove Park, in the northwest residential sector of Rangiora,
- Dudley Park, Rangiora, to the west of the CBD,
- Grange View Reserve, in the northern part of Woodend,
- Hinemoa Park, at the southern end of Kaiapoi.

There are several conclusions that can be drawn from the monitoring at these five locations:

1. Background (L_{A90}) noise levels during the day are typically between 40 and 50 dB. This is consistent with what we expect in established residential areas away from major industry.
2. Background (L_{A90}) noise levels at night are typically 25 to 35 dB. Again, this aligns with our experience of similar areas throughout the country.
3. The background noise level at 8 pm is very similar to the daytime levels. Noise levels are not dropping to night-time levels until about 10 pm.

The results of this survey do not offer any surprises. All of the surveyed areas currently experience an ambient noise environment typical of what we expect in residential areas. In our view, the results support the continued use of the operative residential noise limit of 50 dB (L_{Aeq}) and 40 dB (L_{Aeq}) night-time. The results also suggest that night-time could begin at 10 pm, in line with common practice in many other areas of New Zealand.

There are no background noise levels shown in the report for either of the earlier surveys (2004 and 2009/10), and we therefore cannot draw detailed conclusions. However, none of the results stand out as being unusual.

Overall, we do not consider it necessary to undertake any further noise monitoring of general areas in the district.

5.3 Marshall Day Acoustics' Monitoring

Marshall Day Acoustics have been involved with a number of consent applications in various parts of the Waimakariri District in recent years. In many cases, some ambient noise monitoring was undertaken as part of our work.

We have compiled a summary of useful data from our project files, as follows. As with our discussion on Council monitoring data (Section 5.2), we have only shown background noise levels (L_{A90}), to give an indication of the noise environment in the general vicinity. The data does not say anything about specific activities on or around the sites mentioned. We have shown the address of each site solely to aid with location.

Table 1: Marshall Day Acoustics noise monitoring

Locality	Site Address	Background Noise Level		Year of measurement
		Day (L_{A90})	Night (L_{A90})	
Residential				
Sovereign Palms	140m East of Williams St ¹	42 dB	31 dB	2011
Kaiapoi	10 Edwin Lane	40-45 dB	30-35 dB	2018
Rural				
Ohoka	304 Whites Rd	-	35 dB	2004
Loburn	Sth of Fishers Rd	30-35 dB	< 30 dB	2007
Silverstream	Nth of substation	-	35 dB	2010
Swanannoa	Driscolls and Hars Rd	31-32 dB	-	2011
Cust/Fernside	269 Boundary Rd	34 dB	-	2012
Oxford	Wrights/Dixon Rd	35 dB	-	2013
Swanannoa	Sth of Sth Eyre Rd	35-40 dB ²	-	2015
West Rangiora	254 Easterbrook Rd	45 dB	-	2016
Mandeville	342 Mandeville Rd	-	32 dB (9.45pm) 26 dB (11.30pm)	2018
Clarkeville	46 Elders Rd	40-45 dB	25-35 dB	2018

Locality	Site Address	Background Noise Level		Year of measurement
		Day (L _{A90})	Night (L _{A90})	
State Highway 1				
Waikuku	Z Service Station	55 dB	-	2017
Woodend	Nth End Sand, 400m off road	45 dB	32-35 dB	2018
Woodend	Nth End Sand, 30m off road	57 dB	-	2018

Notes:

1. Measurements predate development of the Sovereign Palms housing estate.
2. Various locations spread over several km.

From this table, we draw the following conclusions:

1. Measurements at the two residential sites are broadly consistent with Council monitoring results.
2. Rural areas are generally 5-10 dB quieter during the day than residential areas, with background (L_{A90}) noise levels ranging from 30-40 dB during daytime, and 25-35 dB during night-time. Variations between sites will often be related to the distance of each site from major roads. None of the measured sites are closer than about ½ km from a significant road.
3. The West Rangiora daytime measurement stands out as the noisiest rural site measured. This may be due to its proximity to Rangiora.
4. Background noise levels close to the State Highway are reasonably high, but reduce considerably within a few hundred metres.

All of the monitoring data is consistent with our expectations for this district. We do not consider it necessary to undertake any further noise monitoring in rural areas of the district.

5.4 Business Zone Noise Monitoring

Background noise data is not particularly useful in business zones because business activities do not require a quiet environment to operate in, and they are not normally very sensitive to noise. As such, we do not see any particular value in undertaking generic noise measurements within existing business zones.

5.5 Additional Monitoring Requirements

Based on our review to date, we have identified four sites where some additional noise monitoring is warranted.

5.5.1 Daiken MDF Plant

Whilst the MDF plant in Ashley is subject to specific noise rules in the operative plan, we are not aware of any recent noise monitoring that has been undertaken around the site/surrounding area. We consider this important, to establish whether or not the plant complies with the operative noise rules.

We are also of the view that it would be good practice to develop some reverse sensitivity rules for the area surrounding the plant, to ensure that any future development in the area is constrained by existing noise effects. This would be of benefit to Council and to Daiken (see 4.1.6).

5.5.2 Woodford Glen

Marshall Day Acoustics undertook some brief noise monitoring near Woodford Glen in 2008. This initial monitoring suggests that noise levels at occupied parts of the Riverlands Park site to the west are in the region of 60—65 dB (L_{Aeq}) during racing. This is much higher than would be appropriate for

residential use, particularly if it happened frequently. In addition, residential development to the north of Woodford Glen is gradually encroaching southwards.

Our experience of motorsport facilities shows that the acceptability of noise is a function of a number of parameters. The two most important are the level of noise and the number of events per year. We recommend that some additional noise monitoring is undertaken to enable noise contours to be established. We also recommend that discussions are held with Woodford Glen and Riverlands management to arrive at an appropriate rule limiting the number of events per year and their operational hours. This rule would not aim to reduce the tracks use, but serve to ensure that the facility doesn't change from a part-time racing venue to a 7 day per week motorsport venue.

5.5.3 *Kaiapoi Sawmill*

Sutherland & Co operate a sawmill at 197 Ohoka Rd, Kaiapoi. The site extends south along the rail line. There are houses within about 50 metres to the east of the site, and a large retirement complex to the north.

Based on our experience with a number of other sawmills, it is unlikely that the sawmill complies with the operative daytime noise rules. We therefore consider it essential to undertake noise monitoring around the sawmill site to check compliance with operative noise rules. The results of this monitoring may have implications for proposed noise rules.

5.5.4 *McAlpines Sawmill*

The sawmill operated by McAlpines in Southbrook currently adjoins a rural zone. We recommend undertaking noise monitoring around this site to protect the operation of the sawmill from reverse sensitivity effects which could arise if houses were built in the surrounding rural zone, or that area was rezoned residential.