BEFORE THE QUEENSTOWN LAKES DISTRICT COUNCIL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER OF Plan Change 50 (Queenstown Town Centre Zone Extension) to the Queenstown Lakes District Plan

REQUEST FOR ACCEPTANCE OF A LATE SUBMISSION

QUEENSTOWN LAKES DISTRICT PLAN REVIEW – RESIDENTIAL CHAPTER
10TH FEBRUARY 2015

QUEENSTOWN TOWN CENTRE - NOISE RULES REVIEW EVIDENCE PREPARED FOR QUEENSTOWN LAKES DISTRICT COUNCIL
29TH APRIL 2009

SUBMITTER
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FOR THE ATTENTION AND CONSIDERATION BY THE INDEPENDENT COMMISSIONERS

1 This is an application under s37 Resource Management Act 1991 to file a further submission on Plan Change 50. I respectfully ask for it to be considered and accepted.

2 This submission includes reasons and information that I believe will assist the Commissioners particularly in regard to the absence of information considering the cumulative effects in the proposed PC50 and existing CBD and adjacent residential areas

3 The District Plan Review - Residential Chapter I have included was made public on 10th February 2015 and has already been altered 14th February by our notification to QLDC of exclusions and will be altered again because of ignored exclusions . The possible changes of building height ,alteration to boundaries and site coverage and changes to a low density residential area , increased noise and population. road congestion from traffic increases will mean the effects and cumulative effects will alter the PC 50 evidence and consequently to the public and visitor, the Queenstown amenity and uniqueness.

4 The professional evidence document by Dr Stephen Chiles was not aware to me at the time of my original submissions but is very relevant and addresses the public and visitor amenity and consequently the noise rules ,especially the nighttime provisions .

5 This evidence is a natural inclusion to the PC50 QLDC evidence of Dr Stephen Chiles - Acoustics .
The proliferation of more bars greater than his 20 bar acoustic assessment and the increase in population based noise pollution ensures that this evidence is in my opinion significantly understated .

6 This submission focuses on concerns that I was not able to introduce as a member of the "expert conferencing panel". I was also not able to attend and was refused entry by QLDC as an "observer only" therefore I am unaware of the agreed outcomes.

6 The submitter acknowledges that his submission is late however I request consideration of this submission because the unusual circumstances of overlapping 10 year and PC50 plan changes is a less than desirable or holistic approach to planning and the piecemeal allocation of information by QLDC makes a complete submission difficult .

Respectfully
Yours Sincerely

Basil Walker ..... BW Walker 15/2/2015

District Plan Review - Residential Chapter

SHARE

The Council is reviewing its District Plan and proposing changes to the objectives, policies and rules of the Residential chapter.

New zonings are also proposed, including a new Medium Density Residential zone to be applied in Queenstown, Frankton, Arrowtown and Wanaka.

The proposed changes seek to streamline the residential provisions significantly, so that they are more effective and easier to interpret and apply.

There are substantive policy and rule changes, including changes to approaches around residential density, and increased height in the High Density Residential zone in Queenstown.

A Summary of Issues and Proposed Changes document, accessed below, provides an overview of the proposed changes.

To submit your feedback, simply complete the following form and email todprfeedback@qldc.govt.nz by 6 March 2015.

- Feedback Form - Email Version - some browsers may not support the submit function within this form, if this is the case for you then please save your document and send to the email above.

Note: You will have the opportunity to attach other documents after you click submit. The above form can also be printed and completed.

If you have any questions on these proposed policies please feel free to attend one of our public drop in sessions where staff will be on hand to discuss.

- 14th February - 10am to 1pm - Summit Room, Edgewater Resort – Wanaka*
- 21st February - 10am to 1pm - Council Chambers – Gorge Road, Queenstown*
- 28th February - 10am to 1pm - Athenaeum Hall - Arrowtown

(an alternate drop in session will also be provided, please keep an eye on this webpage for dates and times)*

Made Available 9/2/15.

Downloads

District Plan Review Residential

1. Residential Summary of Issues and Proposed Changes (201.40 KB)

2. Low Density Residential (841.84 KB)

3. Medium Density Residential (836.98 KB)

4. High Density Residential (773.32 KB)

5. Arrowtown Residential Character Zone (842.59 KB)

10

Arrowtown - Proposed Medium Density Map | Download Fullsize (1.39 MB)

Central Queenstown - Proposed Medium Density Map | Download Fullsize (1.14 MB)

Fernhill - Proposed Medium Density Map | Download Fullsize (1.27 MB)

Frankton - Proposed Medium Density Map | Download Fullsize (1.11 MB)

Wanaka - Proposed Medium Density Map | Download Fullsize (1.33 MB)

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Frankton - Proposed Medium Density Map | Download Fullsize (1.11 MB)

Queenstown Hill - Proposed Medium Density Map | Download Fullsize (1.37 MB)

Thompson St - Proposed Medium Density Map | Download Fullsize (1.23 MB)

Wanaka - Proposed Medium Density Map | Download Fullsize (1.33 MB)

Made available 14/2/15

REPORT

Queenstown Town Centre Noise Rules Review

Prepared for

Queenstown Lakes District Council

Private Bag 50072
Queenstown 9348

29 April 2009

42168107

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Date: 29 April 2009
Reference: 42168107/R002
Status: Draft

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Section 1 Introduction

1.1 Background

In Queenstown's town centre zone there is tension between noise sensitive activities such as residential and visitor accommodation, and noise generating activities such as bars and restaurants. The District Plan allows all these activities within the zone but existing methods to manage and control the potential noise effects appear to be struggling. Lakes Environmental has been aware for some time of difficulties with practical application of the noise rules for the town centre. This report describes problems with the existing noise provisions and proposes options to move forward with a possible plan change.

Many of the same issues discussed in this report exist to a lesser extent in Wanaka and even Arrowtown. However, as requested by the Queenstown Lakes District Council (QLDC), this report is limited to Queenstown.

1.2 URS New Zealand

QLDC has appointed URS New Zealand Limited (URS) through Lakes Environmental to prepare this scoping report to inform a possible plan change to the district plan noise provisions for the Queenstown town centre zone.

The primary author of this report, Dr Stephen Chiles, has extensive experience dealing with the acoustic issues in the Queenstown town centre, having recently worked for Lakes Environmental in connection with numerous different bars. This report has been triggered by current work on an appeal relating to a resource consent for the Guilty bar and restaurant on Ballarat Street. That appeal questions fundamental aspects of the district plan noise provisions for the town centre. Other previous work includes bars on Church Lane, in particular Montys, and also issues relating to Barmuda and Revolver.

1.3 Approach

This report is intended to provide background material to aid a possible plan change. We have started by simply documenting some of the current acoustic issues in the town centre as we understand them. We have then gone on to provide details of noise provisions from other towns in New Zealand as a benchmark, and have explored technical issues such as the existing ambient noise levels in Queenstown and the propagation of noise from the town centre. These initial sections of our report provide a basis on which we have then devised options for a plan change. The methods proposed are given in outline detail with discussion of their implications. Recommendations are made as to additional work that would assist in proceeding with a plan change.

Section 2 District Plan

2.1 Introduction

This section reviews the current noise provisions of the district plan and the implications for bars and restaurants in the town centre.

2.2 Objectives and policies

This scoping report is primarily to address technical acoustic issues and therefore we have not conducted an in depth review of the objectives and policies of the district plan relating to the town centre. However, as the objectives and policies provide the basis for noise rules, we consider it important to consider two critical issues arising from chapter 10 of the district plan:

a) Policy 1.3 is *"To provide for and encourage the integration of a range of activities within town centres, including residential activity."* We note that this specifically allows for residential activity in the town centre. There are also various other statements allowing for visitor activities and we take this to include visitor accommodation.

b) There is no specific mention of bars and restaurants in the objectives and policies. Numerous statements include allowance for a 'wide' or 'full' range of activities, which could be taken to include bars and restaurants. However, it is surprising that this major activity in the town centre is not mentioned directly, given the significant potential effects. There is one mention of entertainment in an explanation, and there is discussion of vibrancy in the town centre, but this is not explicitly linked to bars and restaurants.

In summary, the important factors influencing our analysis is that currently we understand the objectives and policies to explicitly allow for residential activity in the town centre and to implicitly allow for visitor accommodation, bars, restaurants and other entertainment.

When dealing with recent issues in the town centre it has become apparent that there is a firm belief amongst some bar owners and their patrons and supporters that Queenstown is a "party town", which requires audible night-life to be a vibrant environment. The district plan does not provide methods that would allow a party town at the same time as allowing for residential activity in the town centre. We consider that this disconnection between common perceptions of what should be allowed and the provisions of the district plan is at the root of existing problems.

2.3 Noise rules

Unless otherwise permitted by a resource consent, bars in the town centre are subject to the following rule (10.6.5.2.ii) in the district plan. The full version of the rule also includes more stringent noise limits for activities in the town centre transition sub-zone, between Man, Shotover, Brecon and Hay Streets. Activities in the town centre are also required to comply with lower noise limits in adjacent residential zones (40 dB after 2000 hrs).

> *Activities shall be so conducted that the following noise limits are not exceeded at any point within the boundary of any other site within this zone:*
>
> - *daytime (0800 - 2200 hrs) 60 dBA L_{10}*
> - *night time (2200 - 0800 hrs) 50 dBA L_{10} and 70 dBA L_{max}*

There are no rules in the district plan relating to the design or location of residential and visitor accommodation in the town centre to control noise at the receiver.

Draft plan change 27A would update the wording and terminology used in this rule, but would not alter the fundamental requirements. One of the changes in draft plan change 27A is that noise levels would be written as 50 dB $L_{Aeq(15\ min)}$ rather than 50 dBA L_{10}. The $L_{Aeq(15\ min)}$ and L_{10} both refer to an "average" value

of the noise typically over 15 minutes. The slight differences between these two descriptors are discussed in the draft section 32 analysis for plan change 27A.

For clarity, throughout this report we will not specify L_{10} or $L_{Aeq(15\ min)}$ but will refer to levels in the format "50 dB". This will always refer to an A-weighted level, and when written into any noise rules the full acoustic descriptor would be required. We will discuss A-weighting later in this report with respect to music noise.

As well as the "average" noise limits, the district plan includes an L_{max} noise limit at night which is for the highest level measured for a fraction of a second. Whenever we refer to an L_{max} noise level in this report it is explicitly noted with the descriptor included. In accordance with draft plan change 27A this is written as L_{AFmax}.

Daytime

The noise limit in the town centre is 60 dB during the day. Guideline values often referred to by the World Health Organisation are that at 55 dB few people are seriously annoyed by noise and at 50 dB few people are moderately annoyed. However, within the context of a town centre people are generally more tolerant of noise and we consider that the 60 dB daytime noise limit provides appropriate amenity including for town centre residences and visitor accommodation. Anybody attempting to sleep during the day would probably need to keep their windows closed and use mechanical ventilation.

We are not aware of any complaints about bars and restaurants relating to the daytime noise limit (before 2200 hrs).

A 'quiet' outdoor area of a bar or restaurant with some separation or screening from neighbours could operate within a 60 dB limit during day providing that it is well managed and there is no exuberant or boisterous activity. However, on the basis of measurements at numerous bars, we believe that noise from people talking outside most bars and restaurants in the town centre currently breaches this daytime limit on a regular basis by in the order of 5 to 10 dB.

Night-time

The night-time noise limit is 50 dB. The World Health Organisation recommends a noise limit inside bedrooms of 30 dB to prevent sleep disturbance and the corresponding noise level outside an open window is 45 dB. Again, we do not consider that the increase to 50 dB is significant in the context of a town centre, although it may require residents to keep windows closed and use mechanical ventilation.

A noise limit of 50 dB generally precludes any outside activity at bars after 2200 hrs. The noise limit may be achieved with a small group of people talking quietly if there is some separation and/or screening, but this would require intensive management. Music entertainment inside bars would exceed the 50 dB limit unless there is enhanced sound insulation including door lobbies and excluding significant areas of standard thickness glazing.

There have been numerous complaints about noise from bars in the town centre at night. In most cases, this relates to instances where the 50 dB noise limit is breached. On the basis of our measurements we believe that many bars in Queenstown town centre regularly breach this night-time limit.

At night there is also a 70 dB L_{AFmax} noise limit. Again, if people are outside a bar it is almost inevitable that this will be regularly breached.

2.4 Summary

The noise limits for the town centre do allow for residential activity in the town centre, and are therefore consistent with the objectives and policies of the district plan. However, we consider that the noise limits do not allow for outdoor areas of bars and restaurants at any time of day or night, and essentially do not allow for any activity in the town centre after 2200 hrs. The objectives and policies are not clear on this issue but potentially this might be considered inconsistent with the desire to allow for a wide range of activities and the desire for vibrancy.

Section 3 Current Issues

3.1 Introduction

In this section we simply raise our understanding of existing problems that arise in the town centre with regards to noise. Methods for addressing these issues are provided in subsequent sections of this report.

3.2 Plan compliance

As we have discussed in the previous section, on the basis of numerous noise measurements we consider that there is currently extensive non-compliance with the district plan noise limits in the town centre by bars and restaurants, both during the day and at night.

This is an issue which Lakes Environmental is responsible for enforcing, and we are aware of substantial and continuing effort made by Lakes Environmental in this regard. However, as the noise limits are so far removed from the actual established operation of bars and restaurants in the town centre this is a difficult task. We are aware that Lakes Environmental takes a pragmatic approach when enforcing noise limits. In particular we understand:

- Lakes Environmental undertake periodic monitoring of all bars in the town centre, and issue abatement notices when bars are breaching the district plan or consent conditions.
- The focus of enforcement action is with regards to night-time noise rather than daytime noise, as there are generally no noise complaints during the day.
- Enforcement is mainly focussed on physical measures such as keeping doors and windows closed and preventing use of outdoor areas and outdoor loudspeakers after 2200 hrs. Enforcement is not usually solely on the basis of measured noise levels.
- In many places there is not residential activity or visitor accommodation on neighbouring sites and noise limits are not strictly enforced on site boundaries where there would be no noise effects.

We note that we are aware of past issues with the contractor responsible for responding to noise complaints in Queenstown failing to follow the Lakes Environmental written procedures. A new contractor has since been appointed. However, as a result of the previous contractor's failings we cannot rely on Lakes Environmental's historical complaints records. Having reviewed some complaints in detail we found that seemingly justified complaints had been incorrectly dismissed.

3.3 Existing use rights

We are aware that two bars in the town centre, Pig n Whistle and Dux de Lux, have existing use rights to use their outdoor areas after 2200 hrs. We understand that the operators of these bars are of the view that in using the outdoor areas at night these two bars are also entitled to breach the district plan noise limits. However, we have not seen any evidence that the existing use rights for either of these bars extends to breaching the noise limits. We understand that both bars are still required to comply with the district plan noise limits. However, both of these bars do currently breach the noise limits on a regular basis, to a greater degree than other bars in the town centre.

3.4 Music

All noise limits discussed so far are for A-weighted sound. The A-weighting is to account for the frequency response of human hearing and combines sound levels at all different frequencies into a single value. Without this simplification noise limits could not be expressed in a succinct manner by a single number. In A-weighting low frequencies are allowed to be significantly greater than high frequencies, as the ear is generally more responsive to higher frequencies. For many environmental noise sources this simplification works well. However, an A-weighted level does not always adequately reflect annoyance from the bass of amplified music.

Section 3 Current Issues

There is a simple mechanism to account for 'special audible characteristics' of noise in the assessment standard (NZS 6802) in that a 5 dB penalty can be applied to the A-weighted level. This can partly account for annoyance from low frequency bass music noise. Another approach could be to specify additional noise limits at low frequencies for music. An interesting alternative approach in Scotland is the use of 'inaudibility' as a criterion, although this is regarded by most people as being too stringent.

Disturbance by music bass noise can be exacerbated by attempts to improve sound insulation. An example is the Spire Hotel where there is high performance sound insulating glazing. This glazing is effective at reducing general noise, but due to the characteristics of glass the high frequency performance is substantially better than the low frequency performance. Therefore bass in music becomes more prominent inside the bedrooms as other frequencies have been reduced to a greater extent by the glass. To significantly reduce low frequency noise generally requires either uneconomically thick glass or secondary glazing (e.g. 200 mm cavity) which can introduce thermal, detailing and maintenance issues.

3.5 Smokers

Since smoking has been banned inside bars and restaurants an issue has arisen as to where to allow smokers at night. By making no provision for smokers they are forced on to public streets where any noise they generate would be uncontrolled. However, as discussed above, if smokers are allowed to use the outdoor areas of bars then they will usually breach the 50 dB district plan noise limit, unless there were particularly stringent controls.

3.6 Sound insulation

There are no requirements for residential and visitor accommodation buildings in the town centre to provide themselves with enhanced sound insulation. While there is a possibility that building envelope sound insulation requirements may eventually become part of the Building Code, the revision has been ongoing for many years and we are not aware of any imminent progress.

Noise sensitive activities could currently be established in the town centre with all ventilation provided by opening windows.

3.7 Residential zones

We are not aware of any formal complaints about noise from town centre bars and restaurants affecting people in the surrounding residential zones. This may indicate tacit acceptance or resignation to the town centre activity.

Anecdotally we understand that there have been complaints about music from bars in the town centre being audible in the residential areas, to the extent that lyrics to a song could be clearly identified. This is unlikely to happen unless noise from bars and restaurants is substantially above the current noise limits.

3.8 Special events

There are various large public events held in Queenstown town centre such as the Winter Festival and New Year's Eve celebrations. Such events involve entertainment of a scale which could never comply with the town centre noise limits and therefore require resource consent. We understand that currently these events breach the noise limits but the noise effects are generally not assessed. We are not aware of noise complaints arising from these events.

There are existing provisions for temporary activities in section 19.2.2.3 of the district plan but this is limited to events with fewer than 200 people outside, and these events still have to comply with the noise limits. Larger events are discretionary activities and require resource consent.

Section 3 Current Issues

3.9 Consents and appeals

Lakes Environmental require noise assessments to be submitted with all resource consent applications for bars and restaurants. Bar owners have had to address the problems with the noise rules discussed above in their consent applications. A typical response to these difficulties is to apply for resource consent to breach the noise limits. We are aware of instances where more lenient noise limits or other controls have subsequently been granted.

We consider that the current situation of bars being granted a relaxation to the noise limits on an ad hoc basis is likely to be failing to adequately consider cumulative effects affecting residential and visitor accommodation in and around the town centre. The current appeal relating to the Guilty bar also confuses the issue by trying to justify a relaxation on the basis of the existing environment already containing noise from another bar, even though that other bar is breaching the noise limits.

We consider that the current convoluted process for noise assessment of all bar resource consents and the inconsistency of resulting decisions is inefficient and ineffective. The problems with the district plan town centre noise provisions are causing significant expense for all parties and the rules may not succeed in achieving the objectives and policies of the plan. However, this needs to be carefully considered through a section 32 assessment.

Section 4 Noise Rule Benchmarks

4.1 Introduction

As part of this review URS has collated noise limits and other provisions for a selection of urban areas throughout New Zealand. These provide a useful point of reference, even though in some instances direct comparisons of the data are not robust due to different styles of town centres not having bars and restaurants in a similar manner to Queenstown. We have separately detailed where certain towns have specific rules for building sound insulation or special events.

We have not made an exhaustive review of all towns in New Zealand or all zones within these towns. However, the data presented is considered to give a good representation of typical noise limits around the country. For comparison, we have simplified the noise limits, for example, by missing out different time periods for certain days of the week. The noise limits given apply within the stated zones. In many cases, including Queenstown, lower limits apply at nearby residential zones.

4.2 Noise limits

District	Zone/Area	Day	Night	L_{AFmax} (night)	Night hours
Queenstown	Town centre	60 dB	50 dB	70 dB L_{AFmax}	2200-0800 hrs
Dunedin	'Red' noise area	60 dB	60 dB	75 dB L_{AFmax}	2100-0700 hrs
Invercargill	City centre/business	65 dB	65 dB	85/80 dB L_{AFmax}	2200-0700 hrs
Christchurch	Central city	57 dB	49 dB	75 dB L_{AFmax}	2200-0700 hrs
	Entertainment precinct	60 dB		-	-
Nelson	Inner city	65 dB	55 dB	75 dB L_{AFmax}	2200-0700 hrs
Wellington	Central area	60 dB		85 dB L_{AFmax}	-
Hutt City	Central commercial	65 dB		-	-
Hastings	Commercial	55 dB	55 dB	80 dB L_{AFmax}	1900-0700 hrs
Napier	Inner city/Art deco	60 dB	50 dB	80 dB L_{AFmax}	2200-0700 hrs
Rotorua	Commercial A	60 dB	65 dB	75 dB L_{AFmax}	2200-0700 hrs
Tauranga	Business	65 dB	65 dB	85 dB L_{AFmax}	2200-0700 hrs
Hamilton	City centre	45 dB inside residences		-	-
Auckland	Central area	65 dB	60 dB 70dB @63Hz 65dB @125Hz	75 dB L_{AFmax}	2300-0700 hrs

The 50 dB night-time noise limit in Queenstown town centre is more stringent than most of these other urban areas in New Zealand. The 70 dB L_{AFmax} limit in Queenstown is the lowest of all these areas.

4.3 Sound insulation

The following table details district plans which have sound insulation requirements for residential or visitor accommodation. Again, these rules have been abbreviated for ease of comparison.

There are differences between the ways in which the sound insulation requirements are specified in this table. However, any of these requirements could generally be achieved by standard building constructions, providing windows do not need to be open for ventilation. Therefore, the main effect of these rules is usually to require mechanical ventilation.

The requirement proposed for Queenstown in proposed plan change 1 was similar to various other towns and cities. However, plan change 1 was withdrawn in 2004 due to the expectation that this issue would be addressed by a revised clause G6 of the Building Code, which has still to materialise.

District	Zone/Area	Requirement
Dunedin	'Red' noise area	30 dB $D_{2m,nT,w}+C_{tr}$ building envelope sound insulation
Christchurch	Central city edge zone	30 dB $D_{tr,2m,nT,w}$ building envelope sound insulation
Wellington	Central area	30 dB $D_{nT,w}+C_{tr}$ building envelope sound insulation *(Plan change 48: 35 dB $D_{nT,w}+C_{tr}$ for Courtenay Place precinct)*
Napier	Inner city/Art deco	40 dB internal level in bedrooms
Tauranga	Business	35 dB internal level in habitable rooms
Rotorua	Commercial A and B	35 dB internal level in bedrooms
Auckland	Central area	35 dB internal level in bedrooms
Queenstown	Town centre	*(Plan change 1 - withdrawn - 35 dB internal level)*

4.4 Special events

The following district plans have exemptions from the normal noise limits for special events.

District	Zone/Area	Event noise limits	Number of events	Comments
Christchurch	Hagley Park	65 dB 85 dB L_{AFmax}	20	No more than 10 events after 2230 hrs
	Cathedral Square	65 dB 85 dB L_{AFmax}	120	None after 2230 hrs
	City Mall	65 dB 85 dB L_{AFmax}	120	None after 2230 hrs
	Victoria Square	65 dB 85 dB L_{AFmax}	20	None after 2230 hrs
	New Regent Street	65 dB 85 dB L_{AFmax}	20	None after 2230 hrs
	Entertainment Precinct	65 dB 85 dB L_{AFmax}	20	No more than 10 events after 2230 hrs, but only to 2330 hrs.
Wellington	Lambton Harbour Area	none	unlimited	Applies for temporary events
Hastings	Residential (receiver)	75 dB (0900-1800) 70 dB (1800-2400)	unlimited	Applies for temporary events
Tauranga	Residential (receiver)	70 dB (1000-2300) 75 dB L_{AFmax}	6	Applies for temporary events. Includes numerous additional controls on the use of sound systems
Hamilton	Residential (receiver)	75 dB (1000-2300) 85 dB L_{AFmax}	5	Applies for special events. Includes numerous additional controls
Auckland	Wynyard Quarter	75 dB 80 dB L_{AFmax}	12	Applies for special events. Includes numerous additional controls. (limits actually in terms of L_{01} rather than L_{AFmax})
		85 dB 90 dB L_{AFmax}	3	

It is clear from this table that most major towns and cities which hold regular events have made allowance for them in the noise rules of the district plans. This allows for events to be held without resource consent being required every time.

Section 5 Existing Environment

5.1 Introduction

One of the comments made in the 'Guilty' resource consent was that bar noise levels should be viewed in the context of relatively high background/ambient noise levels, due to road traffic. While subjective responses and disturbance from different noise sources can be markedly varied, it is a valid consideration to look at the existing noise environment.

Noise measurements have been conducted in the town centre during past projects and two of these are summarised below.

5.2 Transportation study

In December 2006 Marshall Day Acoustics undertook noise monitoring at various locations around the town centre, as part of a transportation study by MWH. These measurements were beside roads along a proposed transport route and were a mix of short-term attended measurements at seven locations and twenty-four hour noise logging at three locations. As the purpose of the measurements was to determine overall traffic noise levels, they do not provide much information about ambient levels specifically in the evening and at night. However, these measurements were mainly by roads currently with light traffic and they do provide an indication of general ambient levels in the areas immediately surrounding the town centre.

The following table provides a summary of the measured levels. All levels are in terms of the $L_{Aeq(15\ min)}$ 'average' level. Times and noise levels have been rounded in this table.

Location	Distance to road	Time	Level
Melbourne Street East	6 m	1230-1500 hrs	50-53 dB
	12 m	0500-2200 hrs	42-61 dB
		2200-0500 hrs	36-51 dB
Melbourne Street West	8 m	1200-1430 hrs	52-54 dB
Between Melbourne and Henry Streets	-	1600 hrs	52 dB
Henry Street	6 m	1300-1530 hrs	55-63 dB
Memorial Street	4 m	1200-1430 hrs	62-65 dB
Man Street	7 m	1230-1500 hrs	54-58 dB
	7 m	0800-2200 hrs	55-65 dB
		2200-0800 hrs	41-59 dB
Thompson Street	6 m	1300-1530 hrs	55-59 dB
Stanley Street (Four Seasons Motel)	12 m	1700-2200 hrs	62-67 dB
		2200-0800 hrs	50-66 dB

This monitoring shows that ambient levels are relatively high but do drop at night to around 40 dB in the residential zones nearest to the town centre. The relative contribution of noise from bars and traffic to these overall levels is unknown.

Regardless of the sources of noise, given that noise levels are not continuous throughout the night it appears that there is unlikely to be justification for allowing noise from bars in the town centre to exceed the residential zone limits. On the basis of these measurements there would be frequent occasions where the existing ambient noise would not 'mask' noise from bars exceeding the 40 dB night-time limit in residential zones.

5.3 Church Lane

The author has previously been engaged by both the Spire Hotel and by QLDC to investigate noise from bars in Church Lane. This included Montys, Subculture, 12 Bar and the Spire Hotel bar.

In October 2006 measurements were conducted at the nearest neighbouring property to Montys. Music inside Montys and people using the outside areas of Montys caused noise levels up to 70 dB between 2200 and 0000 hrs. Following initial management controls by Montys, primarily keeping doors closed and restricting use of the outside area, the levels in January 2007 reduced to around 60 dB after 2200 hrs. More stringent controls have since been implemented but we have not returned to formally measure the noise levels.

Measurements in January 2007 opposite 12 Bar on a quiet night while a DJ was playing ranged from 55 to 58 dB from 2200 to 0200 hrs.

During the January 2007 survey at Church Lane measurements were also conducted by the green opposite the Pig n Whistle. Levels up to 73 dB were recorded primarily due to a band in the Pig n Whistle. Traffic on Ballarat Street did contribute to levels but noise from the Pig n Whistle was dominant.

5.4 Further monitoring

Ambient noise in the town centre at night is currently controlled by activity associated with bars and restaurants, together with some contribution from road traffic. As this environment is well understood we do not consider that further noise monitoring in the town centre is required to progress this plan change.

The main interest is in ambient noise levels in surrounding residential zones and how those zones are affected by noise from bars in the town centre. The transport study measurements were limited in that they only covered one night at each location, and as the night-time measurements were not attended the noise sources were not identified. We consider that additional noise monitoring in the residential zones would be of benefit in progressing a potential town centre plan change.

We recommend that additional noise monitoring should be undertaken at various locations in the residential zones around the town centre. This should occur at approximately six directions from the town centre and in each direction measurements should be at the nearest point to the town centre and also one street back from the interface. The measurements should initially be conducted on busy Friday and Saturday nights between approximately 2000 and 0000 hrs, and should be for 15 minutes in each location. All measurements should be attended so that dominant noise sources can be identified. These measurements could either be undertaken by Lakes Environmental or URS.

Section 6 Sound Propagation

6.1 Introduction

Queenstown has interesting topography in that a significant part of the residential areas such as Queenstown Hill overlook the town centre. The question has been raised as to how sound propagates from the town centre in this specific topography. To investigate this issue we have used an acoustic computer model which accounts for numerous factors influencing sound propagation including screening and reflections from terrain. At this stage the model is for noise from bars and does not include other noise sources such as road traffic.

6.2 Model

The acoustic model was constructed in CadnaA software with the following parameters:

- ISO 9613 algorithms
- Terrain modelled by 1 m contours from the QLDC GIS
- All ground assumed to be mainly reflective with an absorption coefficient of 0.1
- Building outlines taken from the QLDC GIS (some new buildings are missing, e.g. Church Street/Searle Lane development)
- Building heights taken from the QLDC GIS where available and taken as 5 m high in all other cases
- Sound power levels based on a noise source outside Guilty achieving 50, 60 and 65 dB at the apartments opposite. The levels theoretically equate to 1, 14 and 42 people outside the bar respectively. For other bars with closer neighbours the sound power levels and number of people would be lower, but for simplicity all bars have been taken with the same values. All bars have been taken as generating these noise levels simultaneously.
- The only noise sources modelled are people outside bars. i.e. music inside bars has not been included.
- Twenty bars have been included in the model in indicative locations. These locations do not precisely match current bars in the town centre and do not include all streets where there are bars.

6.3 Results

The following three figures show the noise contours for bar noise limits of 50, 60 and 65 dB. Each contour shows the level which is exceeded within that contour. e.g. all the areas within the blue contours are exposed to greater than 40 dB.

Section 6 Sound Propagation

Figure 6-1 Noise contours for twenty bars - 50 dB noise limit

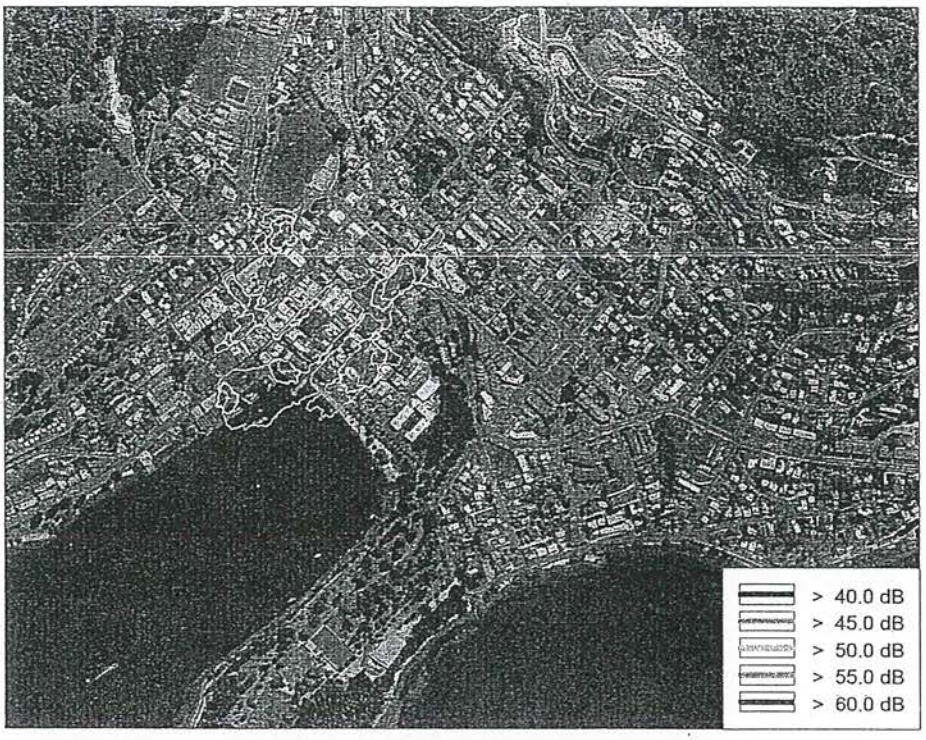


Figure 6-2 Noise contours for twenty bars - 60 dB noise limit

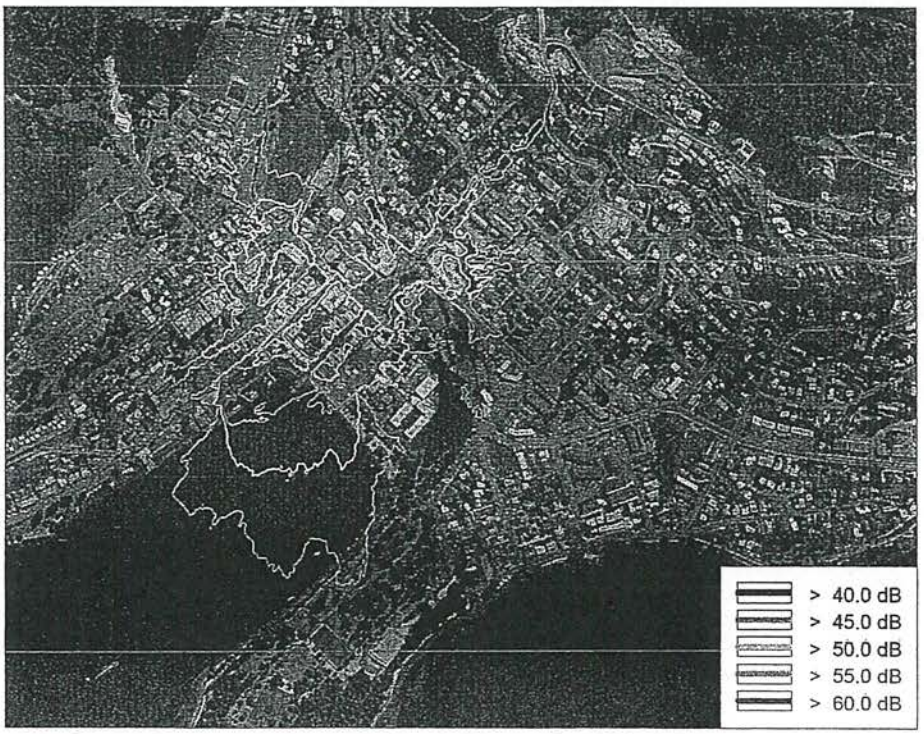
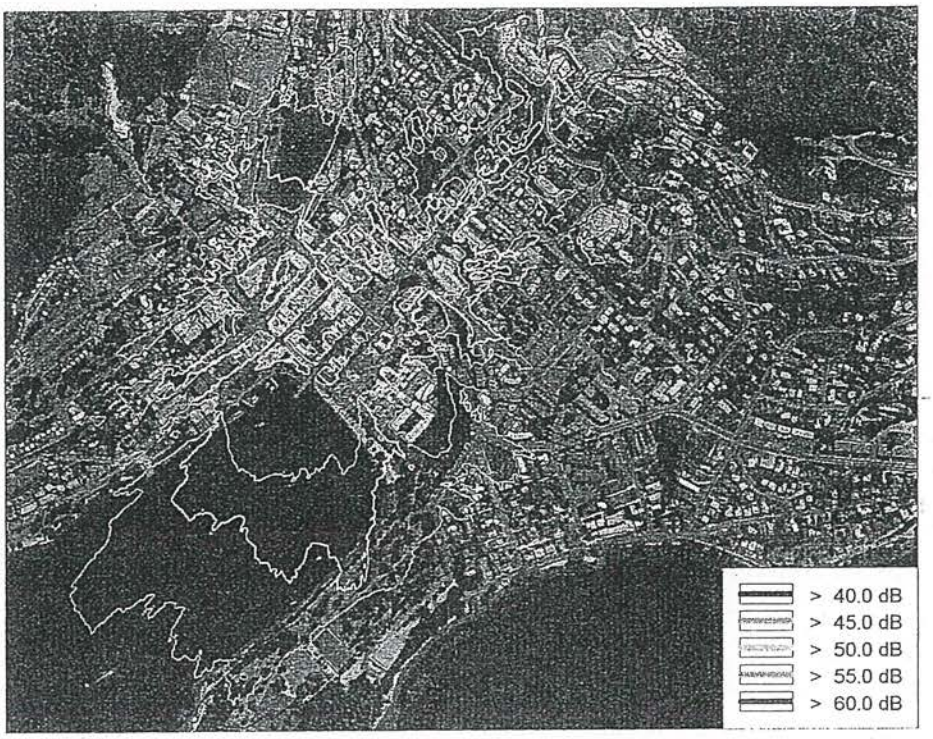


Figure 6-3 Noise contours for twenty bars - 65 dB noise limit



6.4 Discussion

The night-time noise limit in residential zones is 40 dB. The World Health Organisation recommends an external limit of 45 dB to prevent sleep disturbance. It can be seen from the figures above that if the night-time noise limit for bars in the town centre was increased to 60 or 65 dB then the cumulative effect would be that large parts of the residential zones would be exposed to bar noise levels above 40 to 45 dB. This indicates that increasing the town centre noise limits could have a significant adverse effect in residential areas.

The district plan rules currently require activities in the town centre to comply with noise limits within the town centre as well as complying with the 40 dB night-time noise limit in surrounding residential zones. The implication of this modelling is that there is no benefit in significantly increasing the town centre noise limits unless there is either an exemption from the residential zone noise limits or a corresponding increase. Alternatively this may be avoided by allowing increased noise in the town centre only within a limited precinct. The issue is also complicated by the night-time period starting in the residential zone at 2000 hrs compared to 2200 hrs in the town centre.

Now that an acoustic model has been constructed for the town centre it is relatively quick to test other scenarios. Therefore, if plan change options are progressed which propose an entertainment precinct for example then we recommend that further work be conducted to test such scenarios in the acoustic model.

Section 7 Plan Change Methods

7.1 Introduction

On the basis of the summary of existing issues and background information presented in preceding sections of this report, we have identified the following methods for a possible plan change. At this stage the methods are intended to illustrate broad principles, and further refinement would be required prior to the preparation of a plan change. The issues in the town centre are complex and are unlikely to be resolved by a single control measure. Therefore, we envisage that a combination of these methods will be required. Possible combinations are discussed at the end of this section.

7.2 Status quo

Maintaining the status quo as it currently operates in practice is not considered to be a viable option as numerous bars and restaurants are routinely breaching daytime and night-time district plan noise limits. Therefore, to maintain the status quo in terms of the district plan would require substantial effort to enforce the noise limits. This would significantly curtail existing bar and restaurant activity and potentially result in loss of 'vibrancy' in the town centre. In response to this we envisage further bars and restaurants applying for resource consent to breach the noise limits, continuing the current ad hoc increase of noise levels in the town centre.

Furthermore, the status quo does not allow for smokers on site. Enforcing the noise limits would force smokers on to public streets which would result in uncontrolled noise. We consider that it is best practice for an area to be made available for smokers on site. This area should be screened from neighbours and subject to rigorous management control/supervision. However, it is still marginal whether such an area can comply with the existing district plan night-time noise limit.

We have previously discussed special events in the town centre. Under the status quo these events require resource consent.

For the reasons discussed above we do not consider that maintaining the status quo is a viable option.

7.3 Increase noise limits

If it is desired to maintain lively bars and restaurants in the town centre, we consider that this should be explicitly reflected in the objectives and policies of the district plan. The objectives and policies should indicate the extent to which Queenstown is intended to be a "party town". This is a political rather than technical decision. We recommend that there should be community consultation on this issue.

If it is decided that allowance should be made for lively bars and restaurants then noise limits should be adjusted as follows:

- Add a noise limit for building services plant at a level below the existing limits (e.g. 45 or 50 dB). There are standard methods to control building services plant and this should be maintained at a lower level so that it does not increase the overall level dominated by activity.
- Increase noise limits for general activity such as people inside and outside bars to 65 dB during the day and 60 or 65 dB at night. A limit of 65 dB would allow for people talking at normal conversational levels in an outdoor area. The proposed increase at night would only be possible for a limited area (precinct) within the middle of the town centre zone unless limits at the residential zone are also increased, to say 50 dB.
- Add specific low frequency noise limits for music. Further research would be required to determine appropriate limits.

All of these changes would require residential and visitor accommodation to either be restricted or subject to sound insulation requirements as discussed below.

7.4 Sound insulation

Regardless of any other option, if residential and visitor accommodation are to remain in the town centre then we recommend that a sound insulation requirement should be introduced. The examples given in section 4.3 are either in terms of the performance of the building envelope or a required internal level that should be achieved. In determining an internal level it is necessary to know the external level. We consider that it is better to specify the performance of the building envelope as then no further information is required to comply with the rule.

The building envelope sound insulation could be specified in terms of the parameter R_w+C_{tr} which avoids some complexities applying the rules in Dunedin, Wellington and Christchurch. Explanatory text would also be required to cover issues such as ventilation. The sound insulation value chosen will depend on the external noise limit for bars, but it is likely that if the bar noise is allowed up to 60 or 65 dB then the sound insulation requirement should be 35 dB R_w+C_{tr}.

We recommend that a table of constructions should be included in the plan which can be used to demonstrate compliance with the 35 dB R_w+C_{tr} limit. This would be similar to the table of constructions already included in the district plan for buildings affected by airport noise. These constructions would need to be reviewed to ensure they are consistent with the proposed town centre sound insulation standard.

The sound insulation requirements would not apply to or benefit existing residential and visitor accommodation in the town centre.

7.5 Restrict new activities

We have described how existing problems arise from a tension between noise sensitive and noise producing activities in the town centre. One option is therefore to restrict one of these sets of activities. The district plan could be revised so that the objectives and policies discourage new residential and visitor accommodation in the town centre. Alternatively the objectives and policies could discourage new bars, restaurants and other entertainment. These restrictions could be alternated in different parts of the town centre to separate incompatible activities. e.g. in part of the town centre the plan could allow residential activity but discourage bars, and in another part it could allow bars but discourage residential activity.

None of these options for restricting new activities address the existing activities and issues discussed in this report. However, in conjunction with other methods, the introduction of these restrictions may lead to a long term solution.

7.6 Entertainment precinct

We have already mentioned that raising noise limits would only be possible in a limited area before residential zones are adversely affected. This lends itself to an 'entertainment precinct' within the town centre where more lively bars and restaurants are allowed. This would need to be towards the middle of the town centre zone away from residential zones. There is no obvious place where such a precinct could be located as existing noise sensitive activities are spread throughout the town centre zone. We are aware of several apartments and also visitor accommodation in the town centre including: The Spire Hotel, Eichardt's, Sofitel, Novotel, YHA, Thomas' Hotel and Base. We recommend that further investigation should be conducted to formally locate all existing residential and visitor accommodation in the town centre.

On the basis of the noise sensitive activities we are aware of and locations of existing bars, it appears that the most likely location for an entertainment precinct would be between Cow Lane and Searle Lane to the south of Camp Street. We are aware that Eichardt's would be affected by this area and further investigation is required to establish if there are any other noise sensitive activities. The exact location of an entertainment precinct would require significant further consideration and consultation. It is likely that

given the existing activities, any location for an entertainment precinct would require short to medium term compromises.

If bars and restaurants are provided for in an entertainment precinct, the existing stricter noise limits should then be enforced for other bars outside this precinct. New residential and visitor accommodation should be prohibited in the entertainment precinct.

7.7 Special events

We recommend that further work should be conducted to collate full details of existing public events in the town centre. In particular the number of events, their timing and locations should be established.

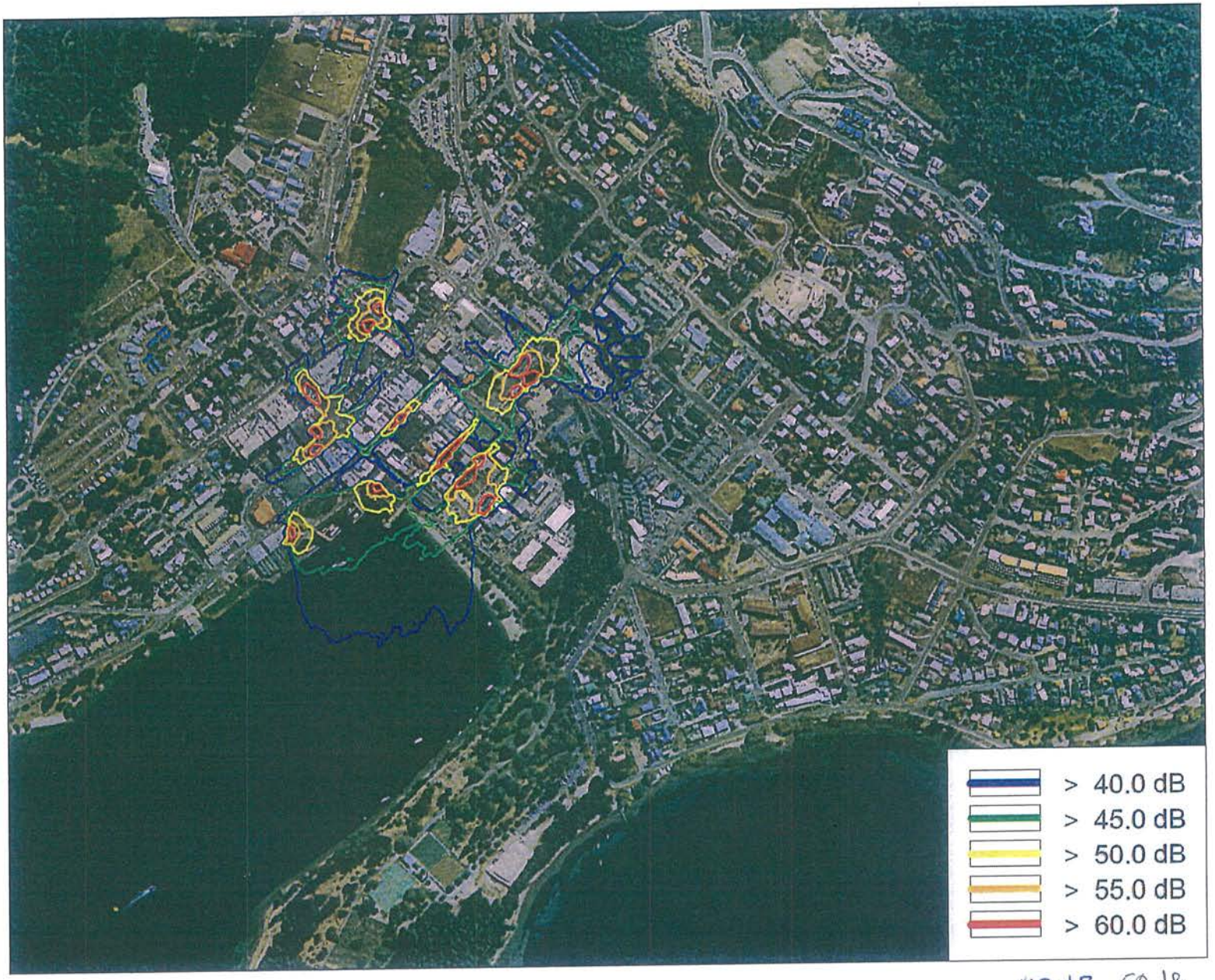
As public events are not currently causing disturbance we recommend that the noise limits should simply exempt these events from the noise limits in an extension of the existing rule 19.2.2.3. There would still be a requirement to adopt the best practicable option for the control of noise under section 16 of the Resource Management Act. The district plan should specify the maximum number, duration and locations of such events allowed under the exemption.

7.8 Combined methods

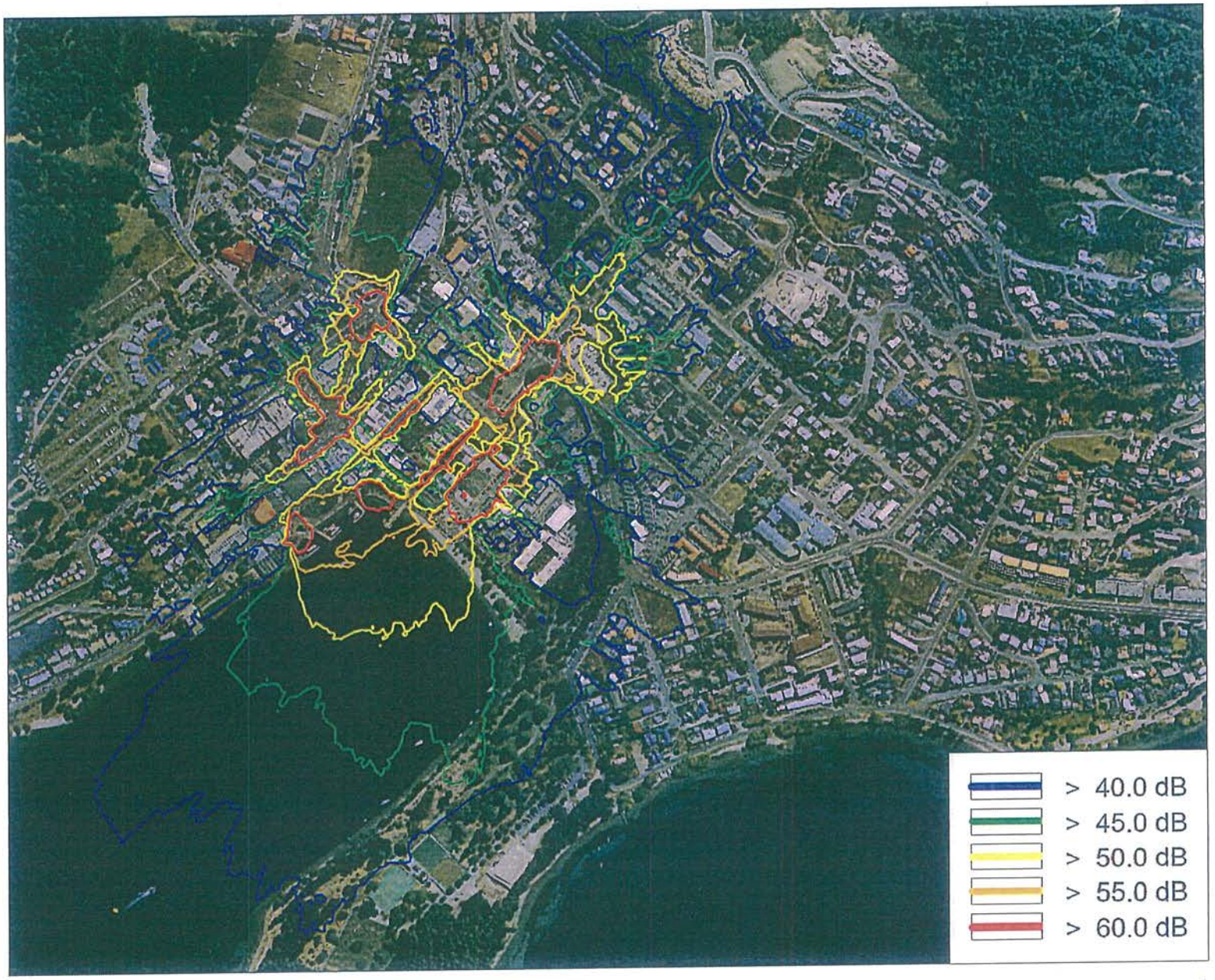
A political decision is required as to the relative importance of residential/visitor accommodation and entertainment in the town centre. We do not consider that these are compatible activities given the manner in which bar owners in Queenstown wish to operate as evidenced by the numerous consent applications to breach the limits. Once a political decision has been made the objective and policies of the town centre should be adjusted accordingly.

We are not prejudging the political decision, but provide the following option to illustrate a possible outcome. This is one possible combination of the methods discussed above if it were desired to maintain both entertainment and residential/visitor accommodation in the town centre:

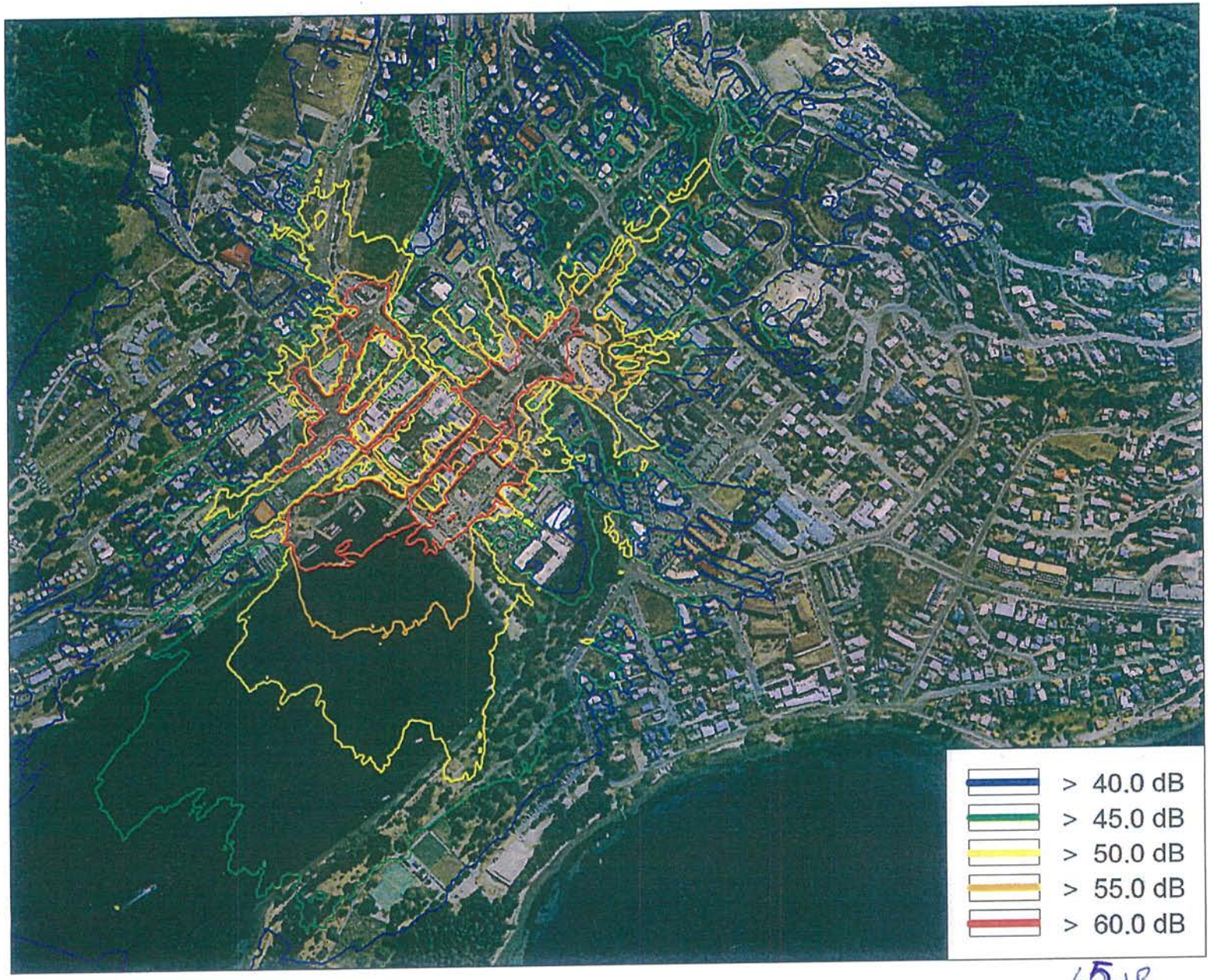
- Increase the town centre daytime noise limit for general activity to 65 dB,
- Introduce specific noise limits for building services plant (45 dB) and music noise (TBC),
- Create an entertainment precinct,
- Increase the night-time noise limit for general activity within the precinct to 65 dB,
- Discourage new residential and visitor accommodation in the precinct,
- Restrict bars and restaurants operating after 2200 hrs outside the precinct,
- Require all new residential and visitor accommodation outside the precinct to have building envelope sound insulation of at least 35 dB R_w+C_{tr},
- Add exemptions for special events.



~~40~~dB. 50 dB.
Figure 6-1.



65dB. 60dB.
Figure 6.2.



65 dB.
Figure 63.