

IN THE MATTER of the Resource Management Act
1991

AND

IN THE MATTER Submission of Jet Boating New
Zealand Incorporated on the
Proposed Queenstown Lakes District
Plan – Chapter 36 Noise

**STATEMENT OF EVIDENCE OF EDDIE MCKENZIE FOR JET BOATING NEW
ZEALAND INCORPORATED
13 SEPTEMBER 2016**

- 1 My name is Eddie McKenzie and I reside in Invercargill.
- 2 I have been Jet Boating since 1981. I joined the Southland Branch of Jet Boating New Zealand (JBNZ) in 1984. I was voted onto the Committee in 1988 and have held various positions – Southland Branch Rivers Officer for the past 19 years. I currently hold a position on the JBNZ National Rivers Sub Committee and have done for the past 10 years. I average 100 hours per year boating rivers and lakes.

SCOPE OF EVIDENCE

- 3 In my evidence I will discuss the following:
 - The Jet Boating New Zealand Incorporated (JBNZ) submission;
 - Comment on the Planners 42A recommending report; and
 - Provide concluding comments and clarify the relief that JBNZ seeks.

THE JBNZ SUBMISSION

- 4 JBNZ supports rule in respect to motorised recreational craft operating on the surface of lakes, rivers and streams in the district
- 5 JBNZ seeks that Rule 36.8.1.2 includes for Jet Boat Racing activities as the plan allows for Jet Boat Racing. We seek to have an additional bullet point to read:
- 6 92 dB LASmax for vessels competing in jet boat race events to be operated between the hours of 0800 to 1800.

PLANNERS 42A RECOMMENDING REPORT

- 7 Mr Barr has recommended rejecting Jet Boating New Zealand submission. This is based on evidence from Dr Chiles Acoustics Engineer. Refer to Statement of Evidence Dr Chiles, Clause 7.8 page 12.

- 8 Dr Chiles states that the increase would be clearly noticeable and could have significant adverse noise impacts. Dr Chiles ended clause 7.8 in saying that in his opinion it is not practical to make this assessment on a district wide basis for unspecified events.

Jet Boat Racing

- 9 In the ODP and the PDP Jet Boat Race events are a permitted activity except for the Clutha River, where they are a controlled activity, being limited to 6 jet boat race days per year
- 10 Jet Boat Racing events have been run in the QLDC area since the mid to late 1960's. In 1987 JBNZ set noise limits for recreational boats of 80 dba and for race and sprint boats of 95 dba.
- 11 New Zealand Jet Boat River Racing Association (NZJBRRRA) employed Bell Acoustic Consulting (George Bellhouse) to undertake an Environmental Effects Assessment on Noise for Jet Boat Racing Events in the QLDC area. Mr Bellhouse's conclusion, last paragraph page 9 of his report states:

The Proposal will not impose an unreasonable amount of noise on people living in the areas adjacent to the race courses. When taken over an average period of 8 months to a year (the frequency of the events), the effects from noise will be less than minor.

- 12 Dr Chiles states that it's not practical to make this assessment on a district wide basis for unspecified events. The QLDC Navigation and Safety bylaw requires application to the Harbourmaster for special events which includes Jet Boat Racing in the QLDC area. Every Jet Boat race event has been applied for and this has been happening long before the ODP. Jet Boat Race Events have never been unspecified.

RELIEF SOUGHT

- 13 JBNZ's submission seeks that the PDP have an additional bullet point to read:

92 dB LASmax for vessels competing in jet boat race events to be operated between the hours of 0800 to 1800.

On writing this hearing evidence the 92 dba is a typo and should be 95 dba as per JBNZ Noise Regulations for Jet Boat Racing.

CONCLUDING COMMENTS

- 14 Jet Boat Race Events are a permitted activity in both the ODP and the PDP. Jet Boat Race Events are required to be applied for under the QLDC Navigation and Safety Bylaw. JBNZ/NZJBRRRA have an Environmental Effects Assessment on Noise for Jet Boat River Racing in the QLDC area that concludes that when taken over an average for the frequency of the events, the effects are less than minor then we ask that that our submission to include a noise level for vessels competing in Jet Boat Race Events be adopted.

Dated at Invercargill this 12th day of September 2016

Eddie McKenzie

JBNZ National Rivers Sub Committee

Attached:

Bel Acoustic Consulting – Environmental Effects Assessment: Noise

QLDC Navigation Safety Bylaw – pages 18 & 19: Clause 30 Special Events

JBNZ Safety/Year Book – page 45: Noise Regulations

conditions that the Harbourmaster may determine appropriate to ensure navigation safety.

- 28.3 If any vessel is a hazard to navigation by reason of it being neglected, abandoned or unseaworthy:
- (a) the Council may give a written direction to the Owner of the vessel to move the vessel to an alternative location or to remove it from the waters within a reasonable time as specified in the direction; and
 - (b) the owner is responsible for ensuring the direction is complied with.
- 28.4 If the owner of a vessel fails to move the vessel in accordance with a direction given under clause 28.3 the Council may move that vessel to a position where it is no longer a hazard to navigation, or remove it from the water. The costs incurred may be recovered from the Owner or agent of the vessel in any court of competent jurisdiction as a debt due to the Council.
- 28.5 The Council may, upon giving public notice of its intention to do so, sell any vessel removed by it pursuant to clause 28.4 and may also sell any contents of the vessel by public auction or private treaty and apply the proceeds of sale to the costs and expenses incurred in the removal of the vessel and its sale.
- 28.6 No person may operate any unseaworthy vessel except to comply with the directions, under this Bylaw, of the Harbourmaster or an Enforcement Officer to move the vessel to an alternative location.
- 29 Person to avoid swimming or diving around wharves or jetties**
- 29.1 No person may jump, dive, swim or undertake any other related activities:
- (a) from or within 50 metres of any commercial jetty or wharf where "no swimming" signage has been placed;
 - (b) within any other area the Harbourmaster determines is in the interest of navigation safety.
- 30 Special events**
- 30.1 Any person intending to conduct a race, speed trial, competition, display, performance, film, advertisement or other organised water activity must apply to the Harbourmaster to:
- (a) temporarily suspend the application of clauses 9, 10, 12 or 17-21 or 27.2 of these Bylaws in that area during the conduct of the event; and/or
 - (b) temporarily reserve the area for the purpose of that activity; and/or

- (c) temporarily suspend the designation of permanent Access Lanes or reserved areas.
- 30.2 Where the Harbourmaster is satisfied, on considering an application under these Bylaws (together with any safety plan that may be required), that the application may be granted without endangering the public, he or she may grant the application accordingly, for a period not exceeding 7 days, and on such conditions (if any) as the Harbourmaster may specify.
- 30.3 Every grant of an application under these Bylaws is subject to Part 4 of this Bylaw unless expressly stated to the contrary.
- 30.4 No grant of an application under clause 30.1 has effect unless not less than 7 days or more than 14 days before the commencement of the activity a public notice is given specifying the period of the activity and details of the supervision or reserved area.
- 30.5 The Harbourmaster can recover all such actual and reasonable fees and expenses incurred by the processing of, and of any public notification of, any such application.

31 Prohibition

- 31.1 The Council reserves to itself the absolute discretion to declare that water based activities will be restricted or prohibited from taking place on any or all rivers or lakes within the District, for such periods of time and under such conditions as the Council may in its unfettered discretion decide.
- 31.2 Any decision made by Council under the provision of clause 31.1 will have effect as from the time such decision is made by Council. The Council will give public notice of such declaration as soon as practicable.

Part 4 – Access Lanes and Reserved Areas

32 Marking of Access Lanes

- 32.1 The Council may, after giving public notice of its intention, declare any area(s) of any lake within 200 metres of the water's edge to be an Access Lane for any specified purpose within which area the provisions of clause 12 do not apply.
- 32.2 The public notice declaring any area to be an Access Lane or alternatively revoking any such earlier declaration of an Access Lane must be publicly notified by the Council at least seven days before the declaration or revocation is to take effect.

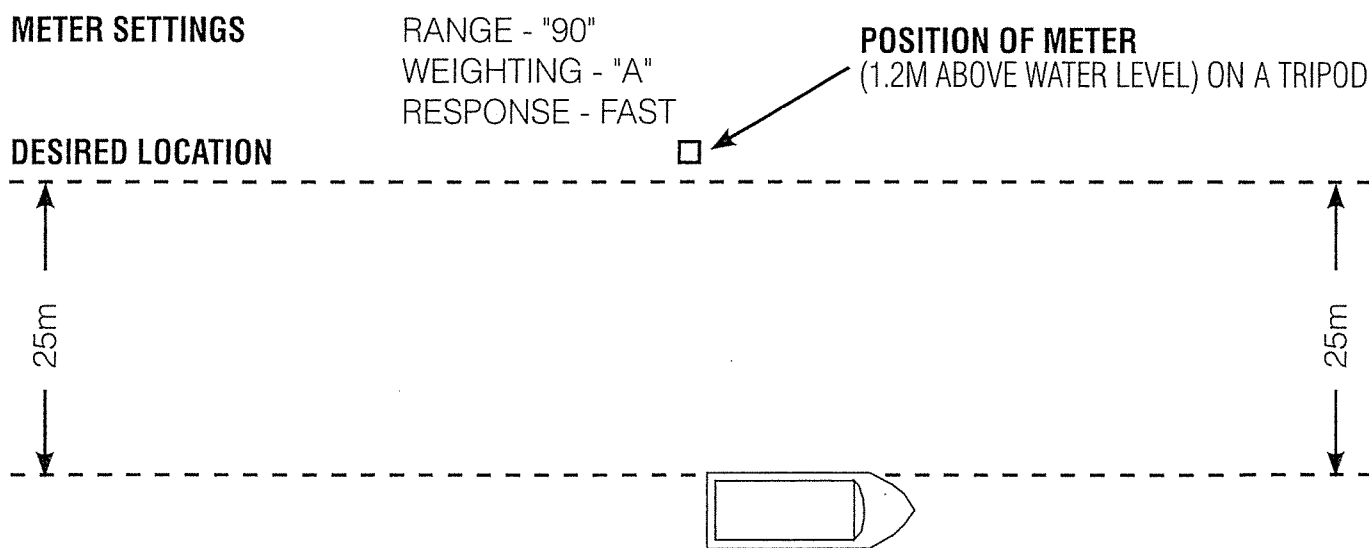
NOISE

NOISE REGULATIONS FOR ALL JBNZ. BOATS AT ALL TIMES RECREATIONAL OR COMPETITION

RULES AND PENALTIES

1. All boats are to be silenced to 80dBa or below.
2. All race and sprint boats are to be silenced to 95dBa or below on race days.
3. On competition days a tolerance of 3 dBa will be allowed.
Penalties: 98.1 - 99.9 = 15%
 100 dBa and above = total disqualification.
4. No competitor can protest another competitor on noise.
5. Competitors cannot protest results of noise reading unless they can prove obvious noise (exhaust) failure while competing in the event.

TESTING FOR NOISE



TESTING (AT EVENT)

1. Use two noise meters where available. Set one meter on the 90 scale and the other on the 100 scale.
2. THE SITE SHOULD BE OPEN WITH NO LARGE OBSTRUCTIONS, TREES, BREAKWATERS, BUILDINGS WITHIN 30 METRES WHICH COULD REFLECT SOUNDS. THE METER POSITION IS TO BE 25 METRES FROM THE BOAT, 1.2 METRES ABOVE WATER LEVEL AND TRIPOD MOUNTED DIRECTLY IN FRONT OF THE OPERATOR. THE BOAT MUST TRAVEL IN A STRAIGHT LINE AT RIGHT ANGLES PAST THE METER.
3. THE HIGHEST READING VIEWED TO BE RECORDED.
METER SETTING RANGE - "100"
 WEIGHTING - "A"
 RESPONSE - FAST
4. Results of test to be forwarded to the Secretary of local Branch who is to forward a copy onto the National Noise officer.

The onus is with the competitor to be re-tested where alterations are made to the boat.

**ENVIRONMENTAL EFFECTS ASSESSMENT:
NOISE**

**NEW ZEALAND JET BOAT RIVER RACING
ASSOCIATION**

**APPLICATION FOR RESOURCE CONSENT TO
CONDUCT JET BOAT RACING EVENTS IN
QUEENSTOWN LAKES DISTRICT**

INTERNATIONAL RACES

18TH JULY 2005

INTRODUCTION

The New Zealand Jet Boat River Racing Association (NZJBRRRA) wishes to apply for Resource Consents to operate various Jet Boat Racing events on rivers and lakes in the Queenstown Lakes District.

The proposal is for the NZJBRRRA to conduct a number of international jet boat race meetings in the District.

This Environmental Effects Assessment considers the potential impact of the noise from these events.

DISTRICT PLAN REQUIREMENTS

In relation to the operation of powered boats using the rivers and lakes the District Plan requires the acoustic measurement and assessment of motorised craft on the surface of lakes and rivers. This requirement is stated in Appendix 2 of the plan.

In essence it places a limit on the amount of noise that may be emitted from boats in terms of the maximum A-weighted sound level (L_{max}) at a distance of 25 metres at the mid point of the manufacturers' recommended full throttle operating speed of the boat under test. The limit for operating a boat is 77dBA L_{max} between the hours of 8am and 8pm daily. The noise emission from individual boats is determined by using this standardised testing method (the method stated in Appendix 2 of the District Plan).

There are noise limits placed on activities in the Rural, Residential and other zones within the District but these relate to activities on the land concerned. It is inappropriate to use these types of limits for noise emissions from individual boats operating on water and presumably, this is why the District Plan imposes a limit in the way that is stated.

The reason for adopting the limit of 77dBA L_{max} is not stated in the Plan but the reason is presumably based on the level that is considered as reasonably achievable for all commercial and leisure craft. It is also probably considered as an appropriate limit of exposure for the residents living close to the lakes and rivers based on an assumed daily exposure to such boating activities. It is a level that is consistent with the noise emitted from heavy road vehicles.

NZ JET BOAT RIVER RACING ASSOCIATION REQUIREMENTS

In relation to the operation of racing boats, the NZJBRRRA requires recreational and racing boats to comply with the New Zealand Jet Boat Association (NZJBA) rules on noise emission. The noise emission from individual boats is determined by a measurement technique that is almost identical to the District Plan requirements, except that the limit that is tolerated is higher.

In essence, the NZJBA rules limit the noise emission to 95dBA L_{max} at 25 metres but also allow a tolerance of 3dBA on competition days. Therefore essentially the National and International limit is set at 98dBA L_{max} for races. This is some 21dB higher than the limit in the District Plan.

The NZJBA has set the allowable level in line with other jurisdictions including those overseas to eliminate problems for all competitors being able to comply with restrictions. It is a sort of quasi-international standard. The imposition of a higher Standard (lower noise level) such as the Queenstown Lakes District Plan requirements for boats in the races would prohibit the staging of these types of events.

NOISE MEASUREMENT PARAMETERS

The District Plan and the NZJBA Rules limit the noise emission from individual boats using the noise parameter L_{max} . This measurement parameter is simply the highest level of noise that occurs when averaged over a period of 1/8 of a second ("Fast" response averaging time). This level of noise will only occur therefore for a fraction of a second during the time that the boat is passing by any particular location. This type of measurement is used because it is a relatively easy parameter to use and is repeatable with reasonable accuracy. However, it will not indicate the overall "noisiness" of an event since it does not take into account the duration of the noise, or the level of noise during the period leading up to and following the "maximum" event. The measurement of an L_{max} level will not differentiate between a transient event such as a jet boat passing by where the maximum level is present for only a fraction of a second and a continuous noise where the maximum level is present for hours on end.

A better parameter to use (and the one that is used for most transient types of events such as aircraft flyovers and road vehicle pass-bys) is the Sound Exposure Level (SEL). This is a particular type of L_{eq} measurement that uses a reference duration of 1 second. If the noise from a jet boat is measured as it passes by a location as illustrated below in Figure 1, the SEL of this event is the total level of noise over the duration of the event compressed into a 1 second period. In effect it is the level of noise that would occur for 1 second that contains the same total sound energy as the varying sound levels that occurred during the entire event (7 seconds in the example shown).

The event lasts for 7 seconds with a rising level of sound as the boat approaches and then decreases again as the boat recedes. The rectangular shape shown represents the SEL of 96.5dBA. The imaginary level of 96.5dBA for 1 second has the same sound energy as the 7 second event with the maximum level of 91.6dBA.

It can be thought of as a parcel of sound energy associated with the boat pass by. If there are a number of such events (eg there are 30 boats passing by) then the total noise exposure will be the sum of these 30 different SEL values. The values can be simply added together logarithmically to get a total value for the entire event since the time associated with each boat has been standardised into a 1 second period for each event. It does not matter whether the boats are bunched together or spread apart the total parcel of sound will be the same. If the boats are bunched together there will be a higher level of sound for a short period and if spread apart the level will be lower but last for longer, but the total sound energy (parcel) will be the same in each case.

Illustration of SEL and L_{max}

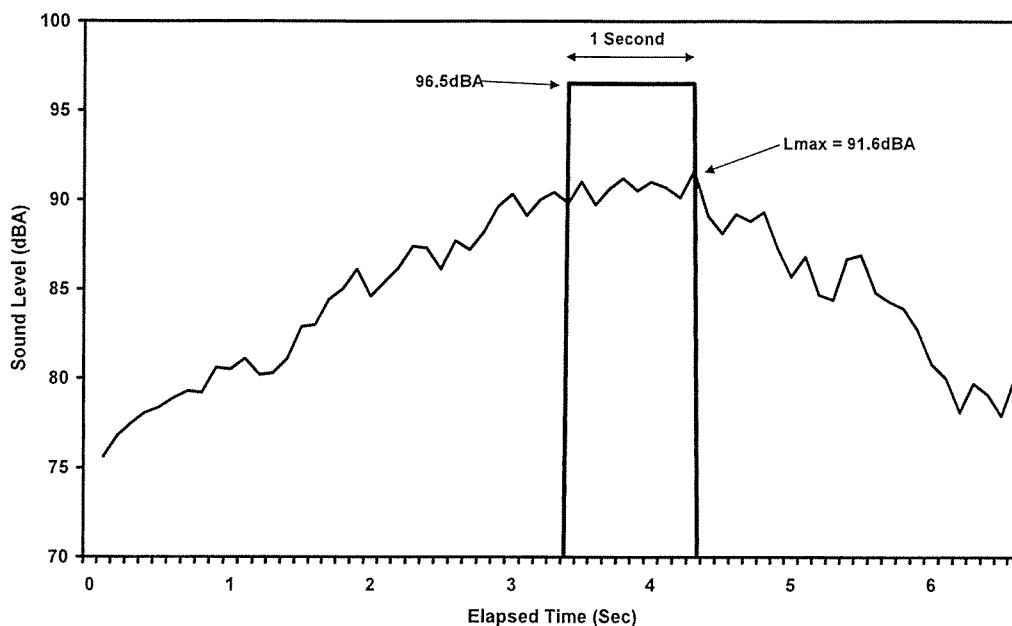


Figure 1: Illustration of SEL and L_{max}

This technique can be used to show how much noise there was from a number of transient events. It can also be compared with some standard for the level of noise that can be tolerated over a full day (or night). It is used in this way for aircraft movements where the individual parcels of sound for each aircraft movement are added together to derive a value for L_{DN} (the parameter used for aircraft noise in the District Plan).

The SEL for a particular event is related to the L_{max} value, but the relationship will vary depending on particular circumstances. The average for the measurements taken for this report was $SEL = L_{max} + 4.9\text{dB}$.

CURRENT SITUATION

There are a number of commercial and recreational users of jet-boats operating trips along the section of the Kawarau and Shotover rivers and on Lake Wanaka and Wakatipu where the proposed race courses are to be located.

The existing noise climate in the residential areas near the proposed race courses has not been determined. This would take some considerable time and expense to achieve a determination that has any real value, and in any case it is not necessary for this Resource Consent application since the District Plan outlines what is considered to be an acceptable level of exposure to noise from the use of jet boats and other powered vessels on the lakes and rivers in the District.

PROPOSALS

There are three types of races that will be involved overall, but this application is concerned with the International events.

Local:	Occurring once per year on each course	30 boats (with 5-10 of these under 77dBA L _{max})
National:	Occurring once every 4 years on each course	40 boats
International:	Occurring once every 4 years on each course	60 boats

NOTE: National and International events will never be held in the same year.

The overall frequency of the events in any one year will be an average of 1.5 races. This assumes that there will be a local race in the same year as either a National or International event.

In each case, there will be a safety helicopter that will make one pass of the river following the front boats. When the boats have finished, the helicopter will return to the last boat in the field and follow it to the finish line.

The proposed operations are as follows:

MATUKITUKI RIVER

The upstream leg is from Glendhu Bay on Lake Wanaka up the lake to the mouth of the Matukituki River then up the river to the Glenafanan Training Works.

The downstream leg will be from Glenafanan Training Works down Matukituki River to Lake Wanaka then down Lake Wanaka to Glendhu Bay

CLUTHA RIVER

This race is between the Lake Wanaka outlet ramp and Lake Dunstan. The Queenstown Lakes District Council District Boundary is at the Luggate Bridge. There will be upstream and downstream legs.

KAWARAU AND SHOTOVER RIVERS

This race starts in Queenstown Bay, Lake Wakatipu. The race boats go out of Queenstown Bay, around into Frankton Arm, down to the mouth of the Kawarau River, down the Kawarau River to Fishermans Hole, around the island, up the Kawarau River to the confluence with the Shotover River, up the Shotover River to the Shotover Jet Jetty.

The return is from the Shotover Jet Jetty on the Shotover River downstream to the confluence with the Kawarau river, Upstream on the Kawarau River to Frankton Arm on Lake Wakatipu, across Frankton Arm to Frankton Marina.

DART RIVER

Starts at Glenorchy Marina and tracks across the Lake Wakatipu to the mouth of the Dart River, up the Dart River to approximately the confluence of the Beansburn. This is determined by the water levels at the time and the finding of an appropriate area deep enough to hold all boats in. The return leg is down the Dart River to Lake Wakatipu, across Lake Wakatipu to Glenorchy Marina.

NOISE MEASUREMENTS

In order to determine the likely effect that races will have on the environment, particularly on the noise environment in the relatively built up areas around Lake

Wakatipu and the Shotover/Kawarau rivers, measurements were conducted on the noise from a sample race boat on 7th April 2004.

BOAT USED FOR TESTING

The boat used for the noise testing program was a typical racing boat that is operated in these types of events. The noise output of this boat was tested by measuring the L_{max} (and SEL) noise level at the testing site at Frankton in accordance with the District Plan requirements.

As can be seen from the results of this testing, the boat produced a noise level at the upper limit of the NZJBA Rules. It can be considered as the noisiest type of boat that would be allowed in the races. It can therefore be considered as “worst case” as far as noise emission is concerned.

MEASUREMENT LOCATIONS

Following discussions with Jonathan Kidd of CivicCorp it was agreed that the measurements would be made at the following seven locations:

- The Narrows: On an access road in front of the closest houses overlooking the Narrows
- Kelvin Heights: On the public access area in front of the houses on the point closest to where the race course cuts across the lake
- Bridge: Adjacent to the houses on the northern side and close to the bridge over the Kawarau river
- Young Property: At the river’s edge by the landing
- Ferry Hotel: At the end of Spence Road, just past the Ferry Hotel on the river side of the road overlooking the river
- Tucker Road: On the river side of the road adjacent to the closest houses in Quail Rise
- Albert Town: In Wanaka approximately 400 metres up from the Lake Hawea-Albert Town Road bridge. On the public area in front of the houses

The locations and measurements were selected in order to obtain representative samples of the noise from a boat as it passed by these areas where there were the most houses. The aim was to determine the “worst case” situations available.

METHOD OF MEASUREMENT

Two sound level meters were used to conduct the measurements, and details are listed in Appendix 4.

The measurements were taken at a height of approximately 1.2m above the ground.

Four runs (two in each direction) were made by the boat along the normal race line and the resulting noise produced was measured.

Two types of measurement were made with the meters:

The L_{max} and the SEL for each run was measured together with noise spectrum

measurements of each run. These were taken by sampling the level of noise 10 times per second. Examples from each location of the resulting graphs are shown in Appendix 2 with the associated noise spectra shown graphically in Appendix 3.

NOISE MEASUREMENT RESULTS

The results of the measurements are tabulated in Appendices 1 to 3.

ASSESSMENT OF MEASUREMENTS

The noise from a passing jet boat increases as it approaches to a maximum level and then diminishes again as it recedes. This is no different from that of a vehicle on the road or an aircraft flying overhead. The process is illustrated in the graphs in Appendix 2. These show that the duration of each event varied depending on the situation. At the Narrows, Kelvin Heights and Tucker road sites where the boat was some distance away from the meter, the duration of the event was between 12 and 18 seconds. At the other sites where the boat was closer or there was some acoustic screening as the boat approached or receded the duration was less at 7 to 12 seconds.

The effect of screening can be seen in the Bridge location where the level dropped suddenly and again at the Ferry Hotel location where the boat suddenly appears from behind the contour of ground leading to the river.

Large variations can be seen in the Narrows graph and this is probably caused by atmospheric conditions at the time. The morning was calm with calm water. Fluctuations such as can be seen in this graph can be expected where the source of sound is 100 to 150 metres or more away over calm water.

The measured levels tabled in Appendix 1 show how consistent the measured levels were. At each of the locations the L_{max} level for each of the four runs varied by between 1.0 and 3.0dB and was typically less than 2dB. The range in SEL was less at between 0.5 and 2.6dB and typically 1.5dB.

The more controlled test conditions for the "calibration" testing gave a range of 1.1dB in the L_{max} level for the four runs and 0.4dB in the range for the SEL of these runs.

The measurements can therefore be considered as consistent. This means that the level of noise from other boats that would be in a race, can be predicted knowing the noise emission from the "Warrant of Acoustic Fitness" test.

The frequency spectrum of the noise from the boat is illustrated in Appendix 3. The graphs are A-weighted spectra, meaning that if all the frequency band levels are added together (logarithmically) the resultant level is the overall A-weighted level.

These graphs show the one third octave spectra in each of the locations. They vary in detail from location to location because of the different acoustic conditions prevailing at each site but it can be seen that in all cases the predominant emission occurs in the 315Hz and 400Hz frequency bands. The levels in these bands (except for Tucker Road) are well above the other parts of the spectrum. This means that these frequencies determine the overall level of noise as measured in dBA. This is illustrated in most of the graphs by the fact that there is little difference between the overall A-weighted level (on the left hand side of the graph) and the 315Hz or 400Hz band level.

The "worst case" locations are Kelvin Heights and the Young property on the Kawarau

river. The level of noise at these locations is around 97 to 98dBA SEL. The total parcel of noise for these locations will be equivalent to a level of 97 or 98dBA for 120 seconds for the entire day.

DISCUSSION

The proposal by the NZJBRRRA for the operation of jet boat races has been assessed for its' potential to impact upon the current noise climate in the vicinity of the proposed races.

The noise from jet-boats operating on rivers and lakes is transient in nature. It is present for a relatively brief period of time. This can be seen from the pass by records of the testing program in Appendix 2. The duration that the noise from the jet-boat occurs for at a level that contributes to the overall level of noise varies depending on the situation but is between 7 and 18 seconds or so. This can be taken to be the time that the level of noise is less than 15dB below the maximum level of noise.

Even if this were to occur every minute until all boats in the race had passed by, it would be present for no more than 60 minutes for each leg of the race. This would then be repeated on the return leg of the race.

However I understand that, for starts taking place on the wider stretches of the waterways, the events tend to be programmed to start 8 or so boats at a time with a wait of up to 5 minutes before the next group of boats is started and so on. This would mean that boats will pass locations near the start of the course in groups with several minutes between groups. Towards the end of the course the boats will have spread out so that a location in that situation would have boats passing by in a more regular fashion. Alternatively, if the boats are started individually at up to 1 minute intervals the "pass-bys" will be regular but may be bunched depending on the relative speed of the boats.

The duration of the associated noise would be less than the 60 minutes stated above in total if the boats were started in groups of say 8 or 9 boats at a time. In this case there would be up to 7 groups in the race.

The total duration of noise would therefore be less than about 2 hours on race day.

In effect there would be a relatively small part of a racing day that would be noisy.

If the boats were bunched together as they passed by a particular location the L_{max} level would be no higher than the noisiest boat unless the boats were very close together in which case the maximum (or near maximum) levels from each boat would tend to add to each other. The boats would need to be within 2 or 3 seconds of each other for a significant increase in the L_{max} level. A noise that is 10dB lower than another one adds nothing to the overall level of noise.

Calm water conditions on a lake tends to enhance the propagation of sound across it (it acts as an acoustic reflecting surface). In windy conditions there will be upwind and downwind effects (enhancement or reduction in the sound received) and this will depend on the conditions at the time. Windy conditions will also tend to produce more variations in the received noise through atmospheric variations.

Jet Boat Race events are permitted in the District Plan and are a Controlled Activity on the Clutha River, being limited to 6 jet boat race days per year on that river. The District Plan assumes that the L_{max} noise level of 77dBA will be complied with. This would not be the case for these races. The extra impact will be 21dB in the maximum level. In general terms, a noise 21dB higher than another one sounds about 4 times as loud. However this has to be balanced against the fact that this level of noise will be present for a fraction of the time that the less noisy boats are present.

In order for noisy public events to take place there must be some tolerance from the community. If there is not, noisy organised events simply could not take place and comply with any standard District Plan requirements for noise. The community is normally involved in these sorts of public events and overall the events should be considered as good for the district. The down side is that a small proportion of the community may be subjected to relatively high levels of noise for a short period of time.

The District Plan recognises that Jet Boat Races are an asset to the District by allowing for them to take place. The problem is that the Plan has not recognised that these events must include boats that are noisier than the standard commercial and recreational boats. It is a bit like motor racing – formula one and other types of racing cars are much noisier than standard on-road vehicles. Limiting races to use “standard” vehicles only would effectively mean that races would not take place.

I am not aware that there have been any complaints during these types of events in the past. Even if there have been complaints about noise, that is to be expected from a few individuals.

It has to be recognised that at the time that the event is taking place there will be an impact on the proportion of the community that is close to the race course but this needs to be balanced against the benefits to the greater community.

CONCLUSIONS

The proposal to operate jet boat races when averaged over a full year’s activities should not significantly increase the amount of noise above that currently being emitted by the river and lake traffic as received at nearby residences. The frequency of occurrence of the events is very low and akin to other events such as the air-show “Wings over Wanaka”, except that the duration of the noise will be less than from this type of event at any particular location along the routes concerned.

The current ambient noise levels in some of the areas concerned currently include commercial and recreational jet boat and other powered boating activities on a daily basis and will be relatively high for a rural/residential area.

The noise from jet-boats racing on the rivers/lakes should be controlled through the Acoustic Certificate of Fitness requirement of the New Zealand Jet Boat Association. The level of control is determined by the requirements of other jurisdictions including International Authorities. The imposition of a higher Standard (lower noise level) such

as the Queenstown Lakes District Plan requirements would prohibit the staging of these types of events and is inappropriate.

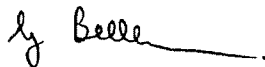
The Queenstown Lakes District Plan requirements for maximum noise emission are based on a daily exposure of people to the noise from boating activities whereas these proposals are for annual events.

The District Plan allows for Jet Boat Racing and also allows for up to 6 days per year of racing as a Controlled Activity on the Clutha River.

The operation of a small number of days per year of jet boat racing will not significantly change the long term level of noise to which the residents closest to the race courses are exposed. This is because the noise emission from jet-boats operating during race meetings is so infrequent that it will produce little extra noise over and above the noise that is produced by jet-boating activities on the rivers and lakes. This is based on the measured SEL data.

The requirements with respect to noise emissions in the Queenstown-Lakes District Plan will be met except with regards to the limit placed on individual boats.

The proposal will not impose an unreasonable amount of noise on the people living in the areas adjacent to the race courses. When taken over an averaging period of 8 months to a year (the frequency of the events), the effects from noise will be less than minor.



G BELLHOUSE

18th July 2005

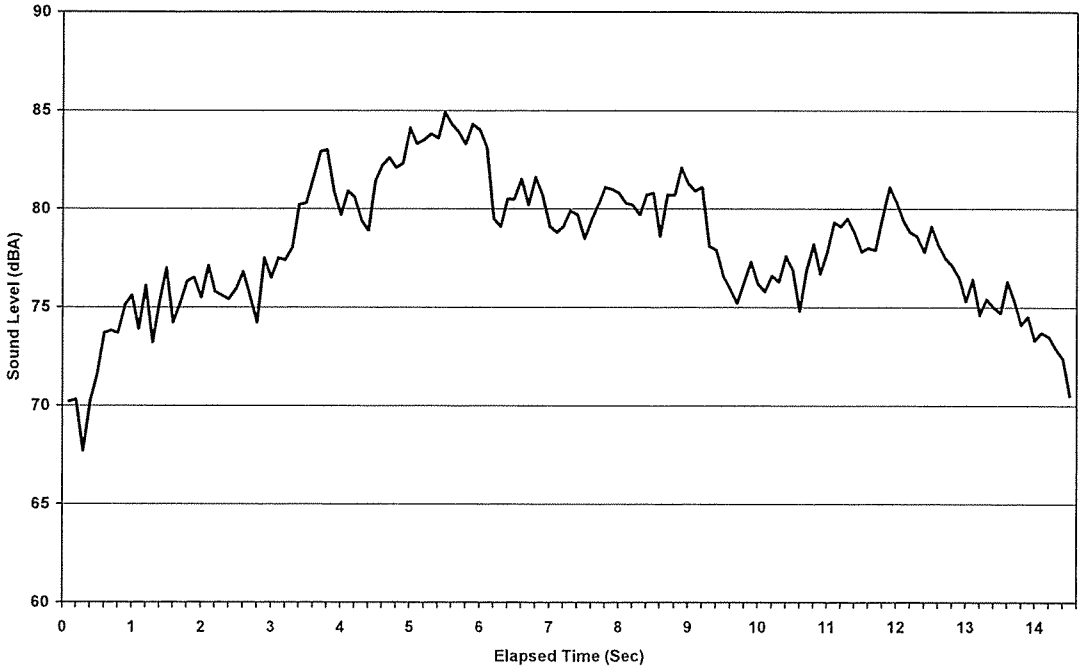
APPENDIX 1: MEASURED NOISE LEVELS

TABLE 1: MEASURED NOISE LEVELS AT ALL SITES

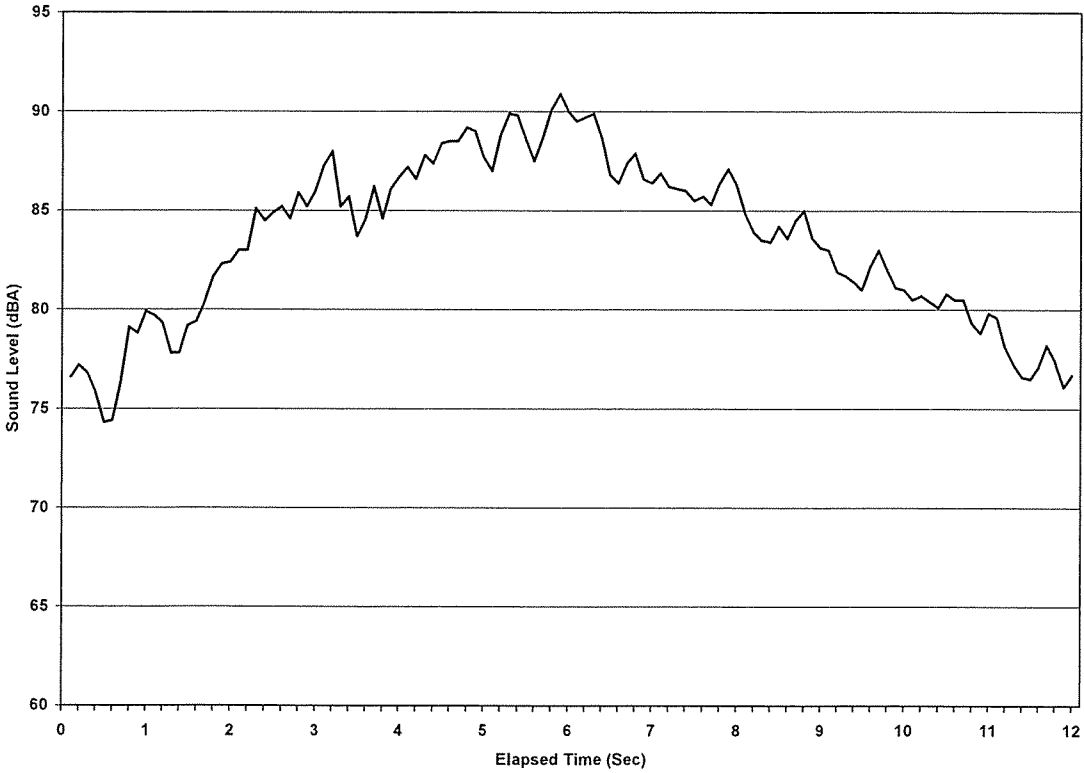
Site	L _{max} (dBA)	Average L _{max} (dBA)	SEL (dBA)	Average SEL (dBA)
The Narrows	85.7	86.8	91.4	92.5
	85.7		91.9	
	87.8		93.2	
	87.9		93.3	
Kelvin Heights	91.2	91.4	96.5	96.7
	90.9		96.5	
	91.9		96.2	
	91.4		97.4	
Bridge	83.3	83.7	87.9	87.4
	83.5		86.8	
	84.3		87.7	
	83.5		87.0	
Young House	93.2	93.0	97.6	97.8
	93.8		98.1	
	91.6		97.8	
	93.4		97.7	
Spence Road (Ferry Hotel)	82.1	81.6	86.5	85.1
	80.6		83.9	
	83.3		86.0	
	80.3		83.9	
Tucker Road	76.8	76.8	83.2	83.6
	78.0		84.5	
	75.7		83.0	
	76.6		83.6	
Albert Town	90.5	91.4	96.2	95.8
	90.5		94.5	
	91.9		96.5	
	92.8		96	
Calibration	97.2	97.6	102.7	101.0
	97.6		100.4	
	98.3		100.6	
	97.4		100.3	

APPENDIX 2: EXAMPLES OF PASS-BY EVENT AT EACH LOCATION

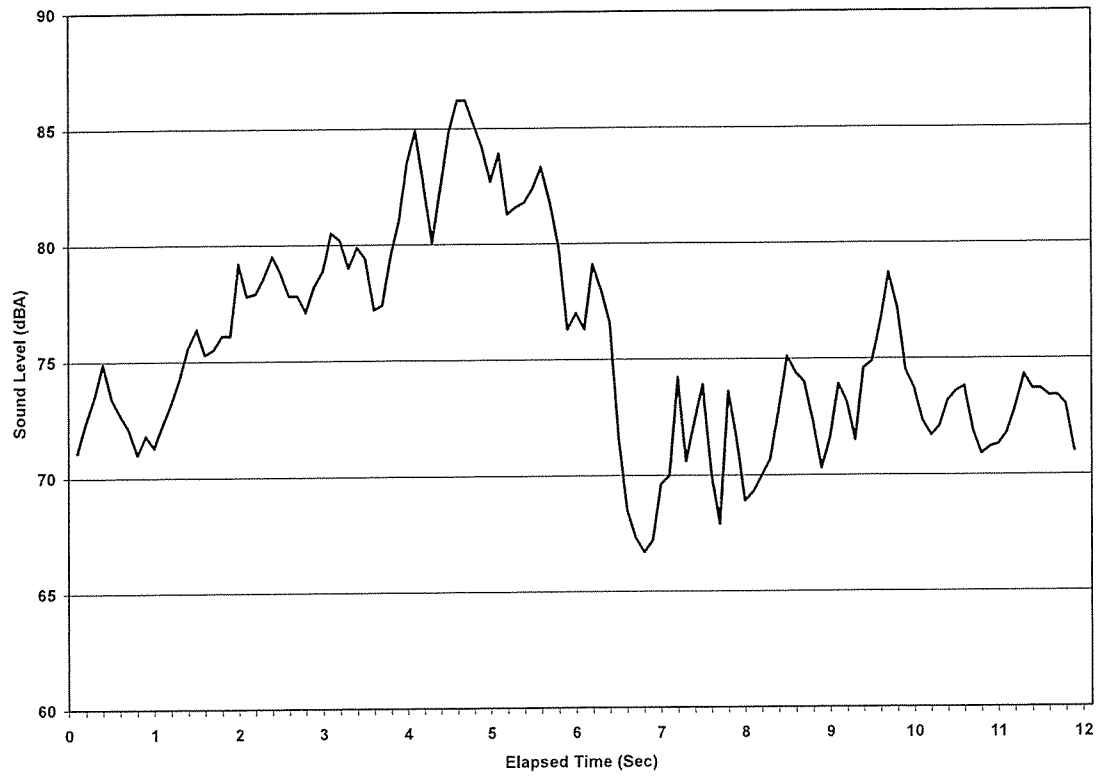
The Narrows



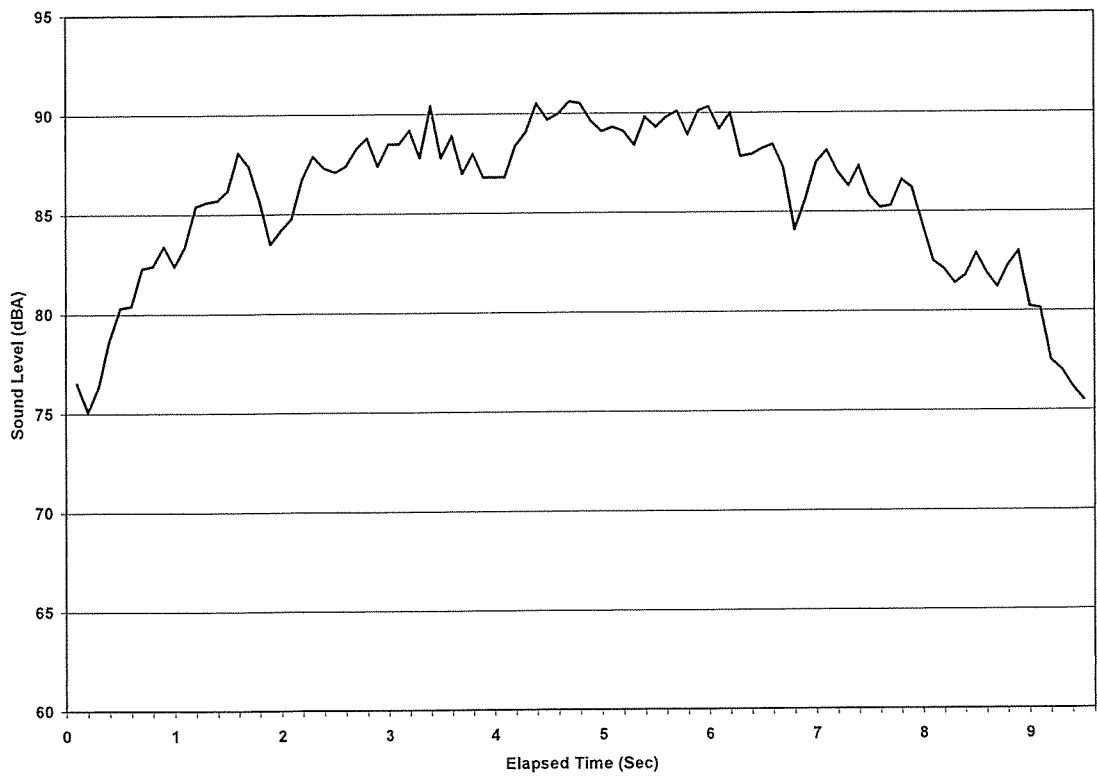
Kelvin Heights



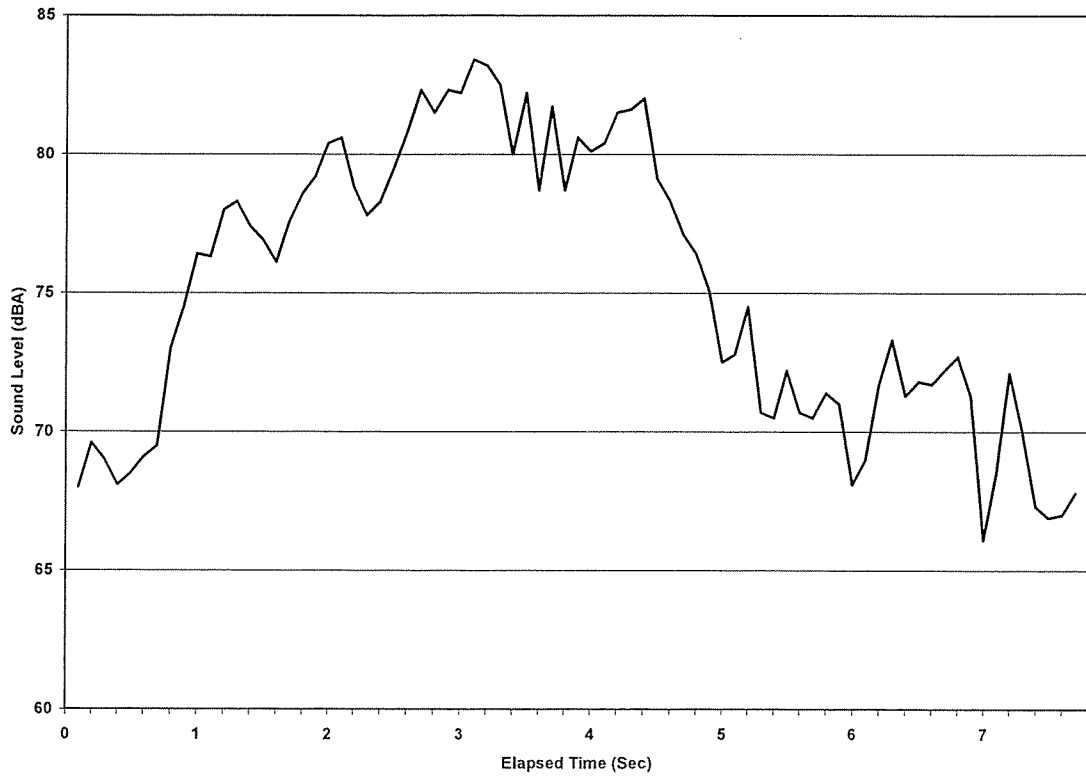
Bridge



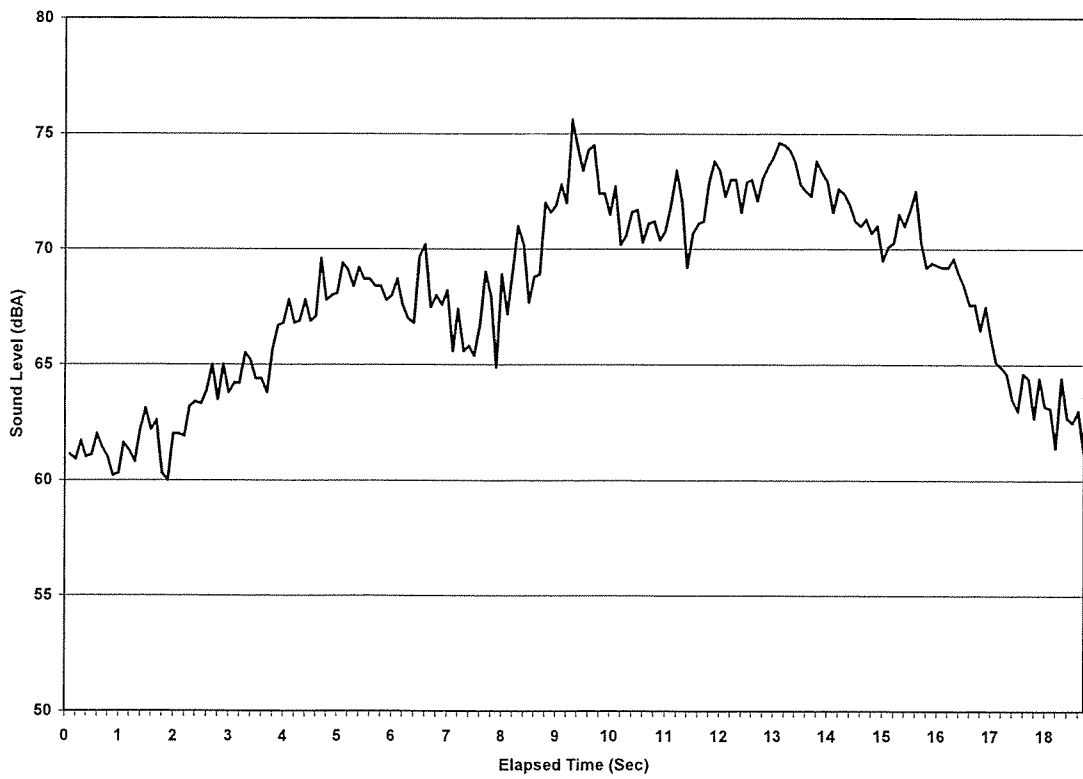
Young Property



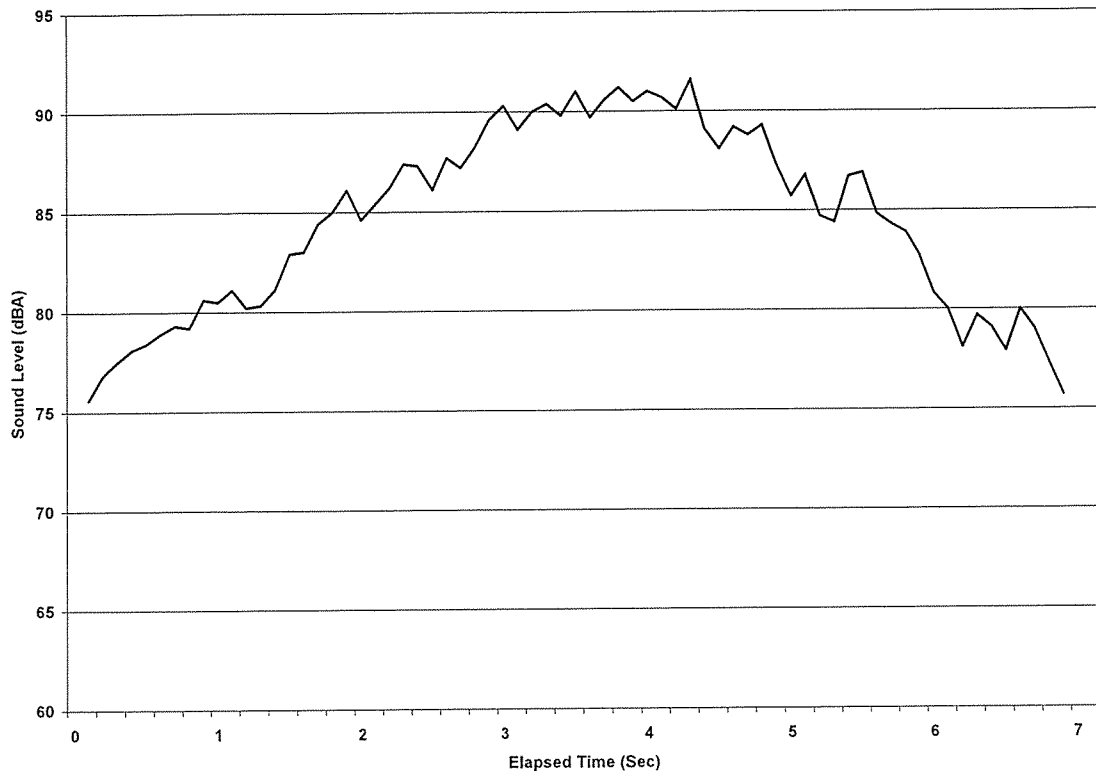
Ferry Hotel



Tucker Road



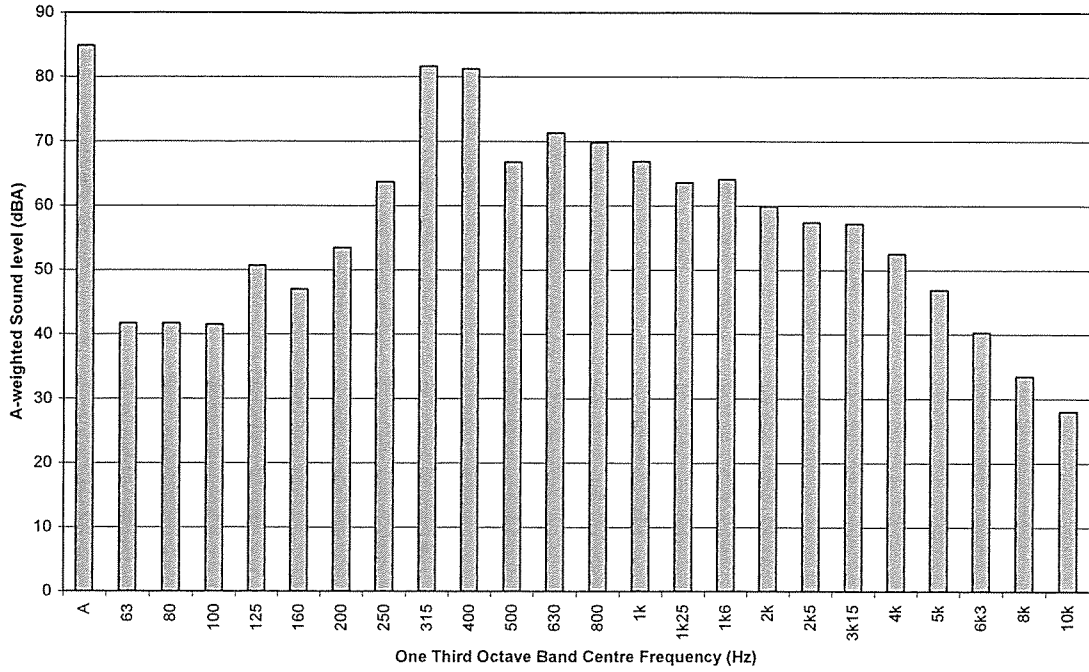
Albert Town



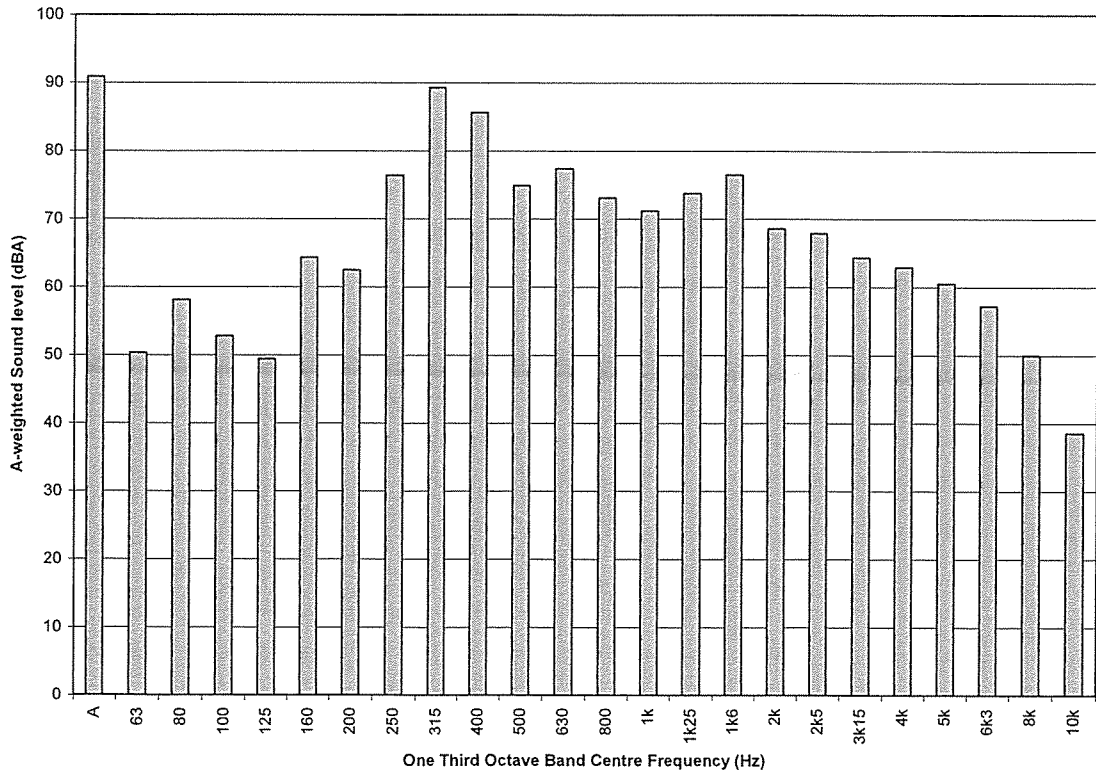
The duration of each event is shown on the x-axis of each graph. This is from the time on approach of the boat where the level was 15dB below the maximum level of the event to the time when the level fell to 15dB below the maximum level again.

APPENDIX 3: L_{MAX} SPECTRA AT EACH LOCATION

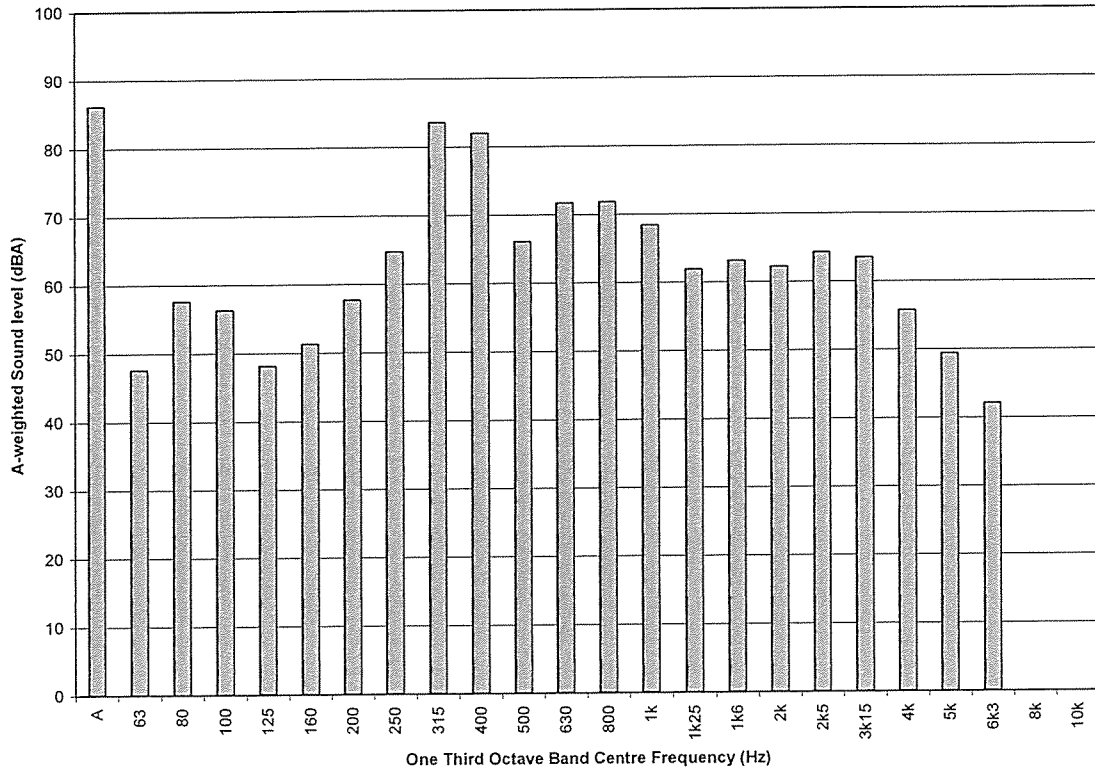
The Narrows



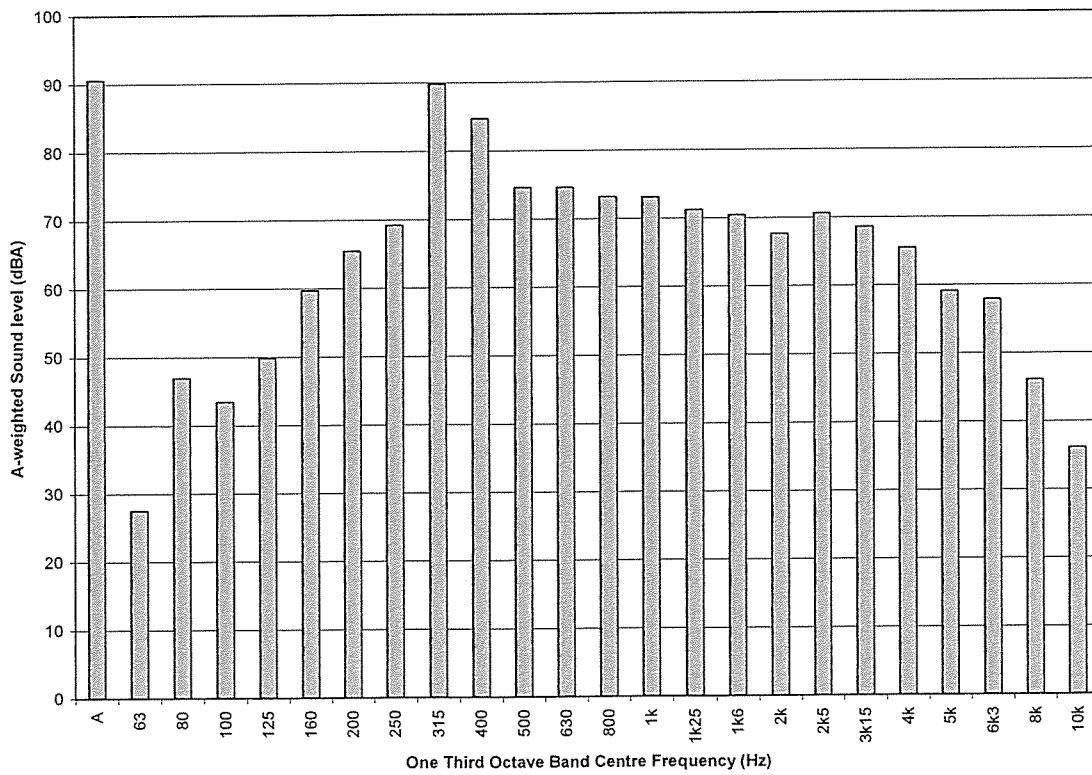
Kelvin Heights



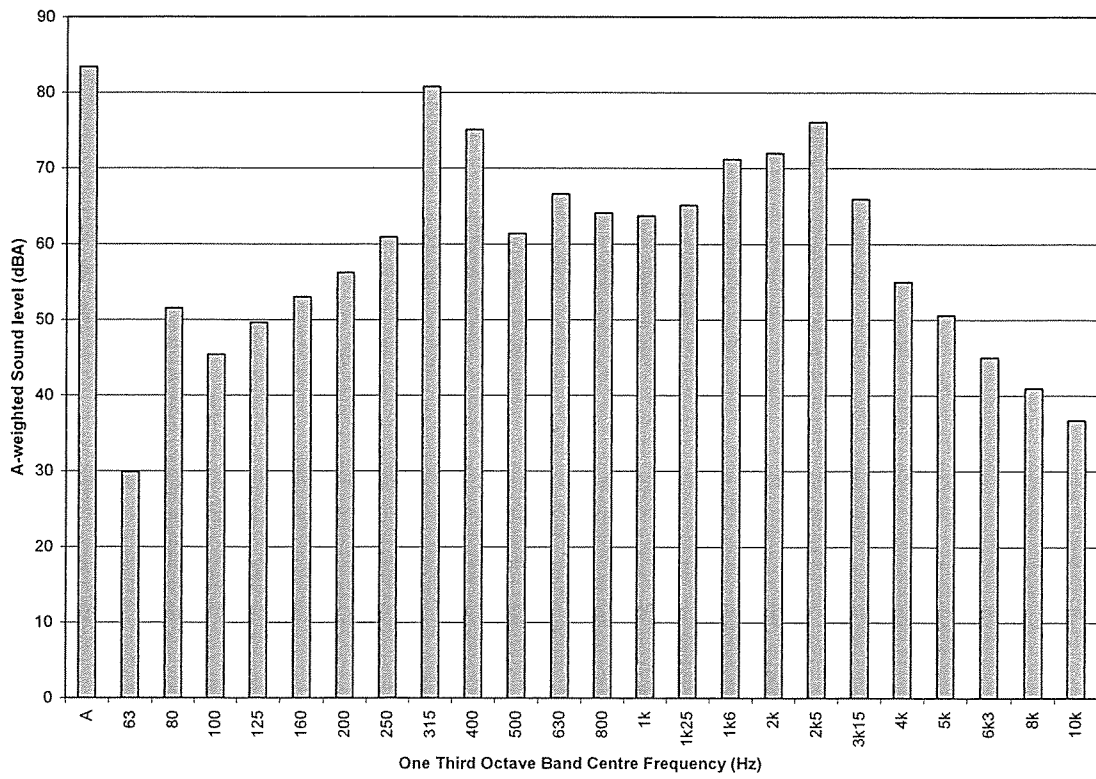
Bridge



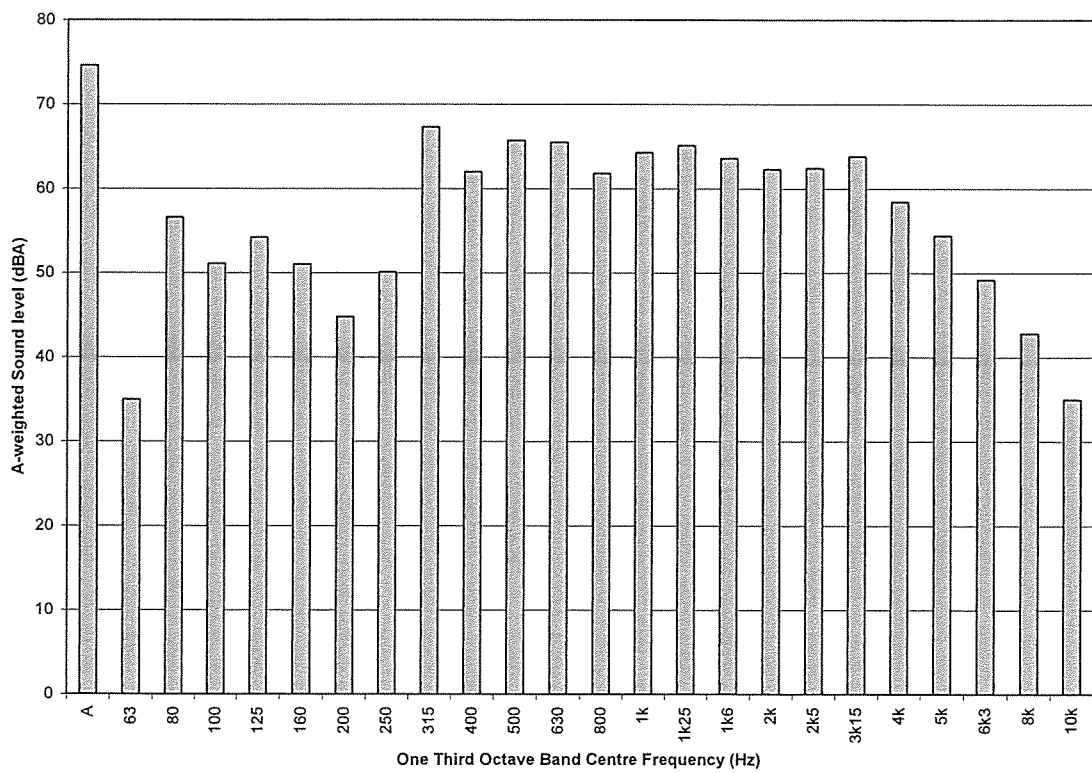
Young Property



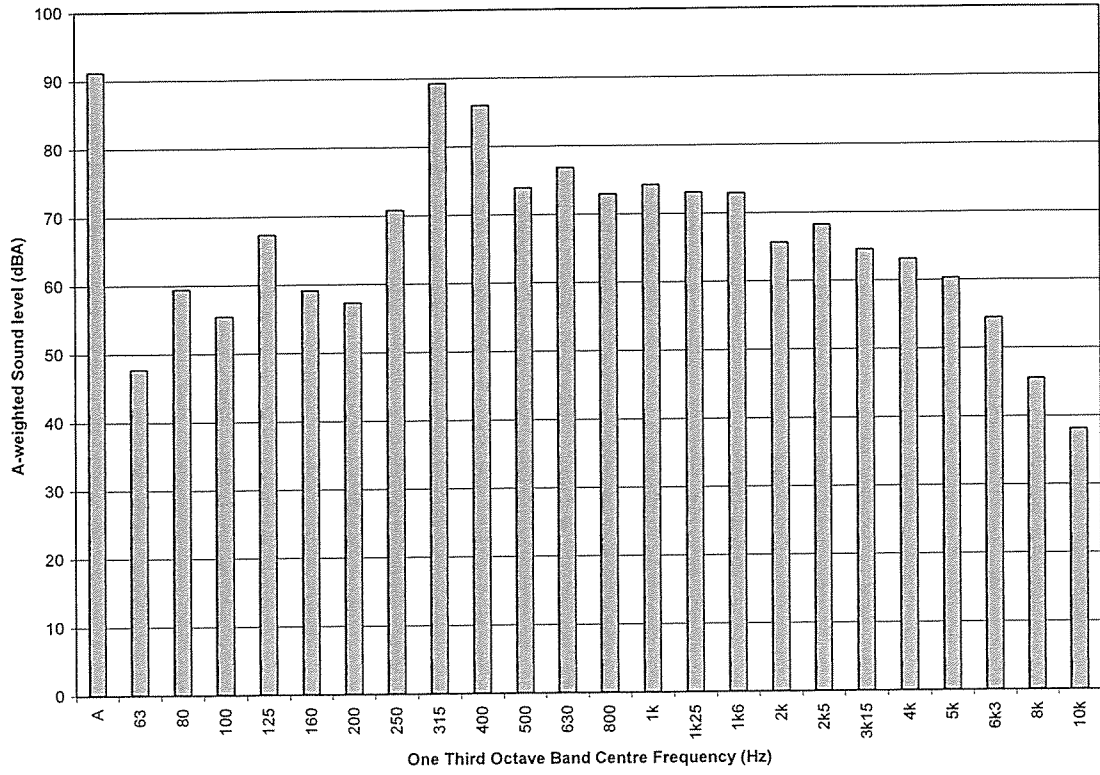
Ferry Hotel



Tucker Road



Albert Town



APPENDIX 4: NOISE MEASURING INSTRUMENTATION

The instrumentation used in the noise measurements is tabled below:

Instrument	Make	Model	Serial Number
Sound Level Analyser	CEL	573B1	2/0581378
Microphone	CEL	250	1301
Sound Level Meter	Rion	NL-18	01060251
Microphone	Rion	UC-53A	64940
Calibrator	B&K	4230	1510824