

18 September 2020

Rotorua Lakes Council
Private Bag 3029
Rotorua Mail Centre
Rotorua 3046

Attention: Kim Smith

Dear Kim

PROPOSED PLAN CHANGE 2 - PUKEHANGI HEIGHTS - SPEEDWAY NOISE & REVERSE SENSITIVITY

Rotorua Lakes Council has requested that Marshall Day Acoustics assist with investigating the potential for:

- noise emissions from the Rotorua Speedway and
- potential reverse sensitivity effects upon the Rotorua Car Club from the proposed Plan Change 2 (PPC2)

INDICATIVE SPEEDWAY NOISE EMISSIONS

Noise contour predictions which show noise levels during a 'worst case' race is attached in Appendix A.

The prediction of indicative noise levels is based on measurements MDA performed at Western Springs Speedway during an international event in 2005. A sound power level of 142 dB L_{Aw} was calculated for the racetrack. The use of this sound power in the predictions is conservative. The sound power is representative of the loudest classes of vehicles that are likely to race at the speedway.

The selection of the sound power for use in the calculations was based on information provided by the Rotorua Car Club. Questions were put to the Rotorua Car Club about:

- the current, and likely future, activity that occurs at the speedway; and,
- type/class of car to be raced in the future;

The questions and responses are attached in Appendix B.

NOISE EFFECTS

Racing at the speedway is essentially an 'evening' activity. The Rotorua Car Clubs response to our questions indicates that the majority of the racing activity occurs between 5pm and 11pm. We acknowledge that part of the activity is in the early part of the 'noise' night-time period¹ (after 10pm).

The district plan allows normal day to day activity to make 50 dB L_{Aeq} in Rural zones and 45 dB L_{Aeq} in residential zones in the evening period every day. The Speedway activity is understood to typically occur up to 25 times per annum (20 Race meetings and 5 practice meetings between September and April). It is accepted practice that activities that occur infrequently can create higher noise levels than activities that occur every day. In our opinion 65 dB L_{Aeq} is a reasonable level if received only 10 to 25 occasions per annum.

We note that speedway noise would be clearly audible in all of the PPC2 area and some people may be annoyed in the future.

However, we also acknowledge there are existing dwellings (in both the residential and rural zones) that are exposed to speed way noise. Some of these existing dwellings are exposed to levels of speedway noise (> 65

¹ Most District Plan noise rules switch over from their daytime noise limits (eg 50 dB) to the lower nighttime noise limit (eg 40dB) at 10pm. Sometimes this changeover is delayed to 10:30 or 11:00pm at entertainment and sporting venues

dB L_{Aeq}) higher than the noise levels predicted to be received in the PPC2 area. Furthermore, many of the existing dwellings would be receiving speedway noise at similar levels (50 – 65 dB L_{Aeq}) to those predicted to be received in the PPC2 area.

Therefore, based upon:

- the conservatively calculated speedway noise levels, and
- the intensity, frequency and duration of the current, and likely future, activity that occurs at the speedway,

we consider that the noise levels received within PPC2 are reasonable but may cause annoyance to some of the new residents.

Reverse Sensitivity

Given the speedway has been in operation since the 1970s the occupants of the existing dwellings are likely aware of the intensity, frequency and duration of the noise that is generated by the speedway activity. This is probably reflected in the low number complaints about noise from the speedway.

However, new receivers, who move in to the PPC2 zones, may come with a different level of expectation. These new receivers give rise to the potential for reverse sensitivity effects upon the speedway.

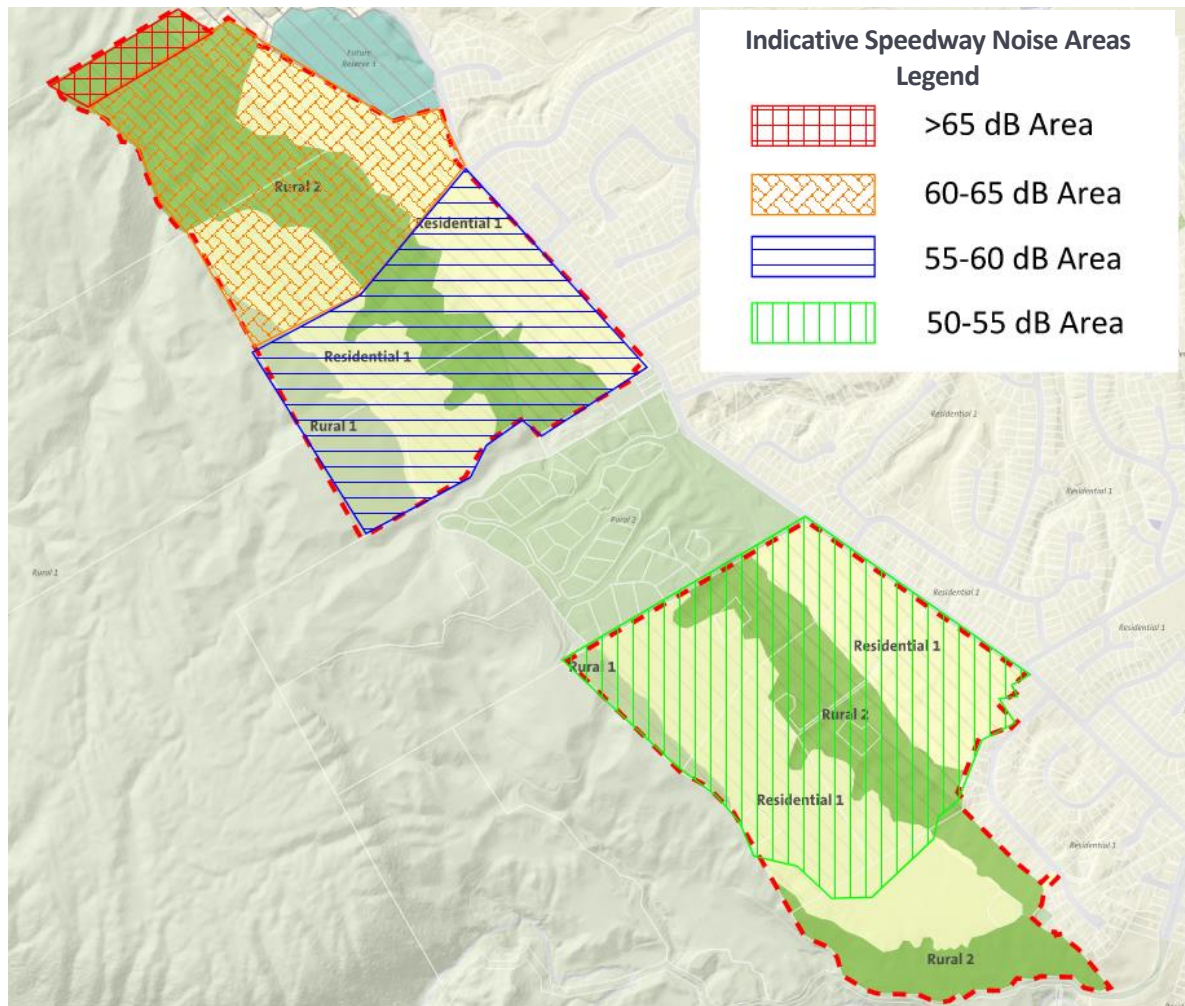
Whilst the speedway is considered to be generating reasonable noise levels when received in the PPC2 area, there is a risk of new residents of the area becoming annoyed by the noise and complaining.

Mitigation possibilities

To address the potential for these effects we suggest the following series mitigation measures are given consideration. We acknowledge that some of these may not be viable within the scope of the Plan Change process.

1. An indication of the potential noise levels from speedway activity be included within the Plan which aligns with the Noise contours shown in Appendix A.
An example figure of Indicative Noise Areas is provided below.

Figure 1: Example 'Indicative Speedway Noise Areas' figure



2. A requirement be added that dwellings within the 60-65 dB and >65 dB Indicative Speedway Noise Areas must include Air conditioning plus mechanical outdoor air ventilation capable of:
 - i. Providing internal temperatures in habitable rooms not greater than 25 degrees Celsius at 5% ambient design conditions as published by the National Institute of Water & Atmospheric Research ("NIWA") (NIWA, Design Temperatures for Air Conditioning (degrees Celsius), Data Period 1991 –2000), with all external doors and windows of the habitable rooms closed;
 - ii. Providing 0.5 air changes (plus or minus 0.1) of outdoor air per hour in all habitable rooms;
 - iii. Each of the air conditioning and mechanical ventilation systems shall be capable of being individually switched on and off by the building occupants; and
 - iv. Creating no more than 40dB L_{Aeq} in the principal living room, no more than more than 30dB L_{Aeq} in the other habitable rooms, and no more than 40dB L_{Aeq} in any hallway, in each building. Noise levels from the mechanical system(s) shall be measured at least 1 metre away from any diffuser, and
 - v. A mechanical kitchen extractor fan ducted directly to the outside to serve any cooking hob, if such extractor fan is not already installed and in sound working order.

Notes:

- These are the provisions of the district plans APPENDIX 7 -NGĀTAKE WAKA RERERANGI-AIRPORT NOISE AND DEVELOPMENT CONTROLS rule A7.2 2 b ii and iii.
- A modern dwelling constructed of typical methods (and using typical thermal double glazing) will provide around 25-30 Dw with doors and windows closed. On this basis the anticipated speedway

noise will be reduced to a reasonable level inside dwellings by the building envelope when doors and windows are closed.

3. Incorporate a no complaints covenant into the property title. We think it would be helpful for the covenant to also state:

The Rotorua Car Club has conducted motorsport activities at the speedway on Paradise Valley Road since 1970.

Noise from the Rotorua Car Club Speedway will be audible during race and practice events.

Typically, 20-25 events occur per year between September and April.

The events typically occur for a duration of 4 to 6 hours, and typically occur between 5pm and 11pm (however they may run later on occasion)

At each event there are 15 -23 races which last 5 to 7 minutes.

Ideally the Covenant would apply to all of PPC2, or at the very least to those in 55-60 dB, 60-65 dB and >65 dB Indicative Speedway Noise Areas.

CONCLUSION

We consider that noise from the typical use (intensity, duration and frequency) of Rotorua Speedway will be reasonable when received within the PPC2 area, however, it will be clearly audible and potentially annoying to some residents.

We have made suggestions on mitigation possibilities that may ameliorate annoyance and reduce the risk of complaint and associated reverse sensitivity effects.

We trust this information is satisfactory. If you have any further questions, please do not hesitate to contact us.

Yours faithfully

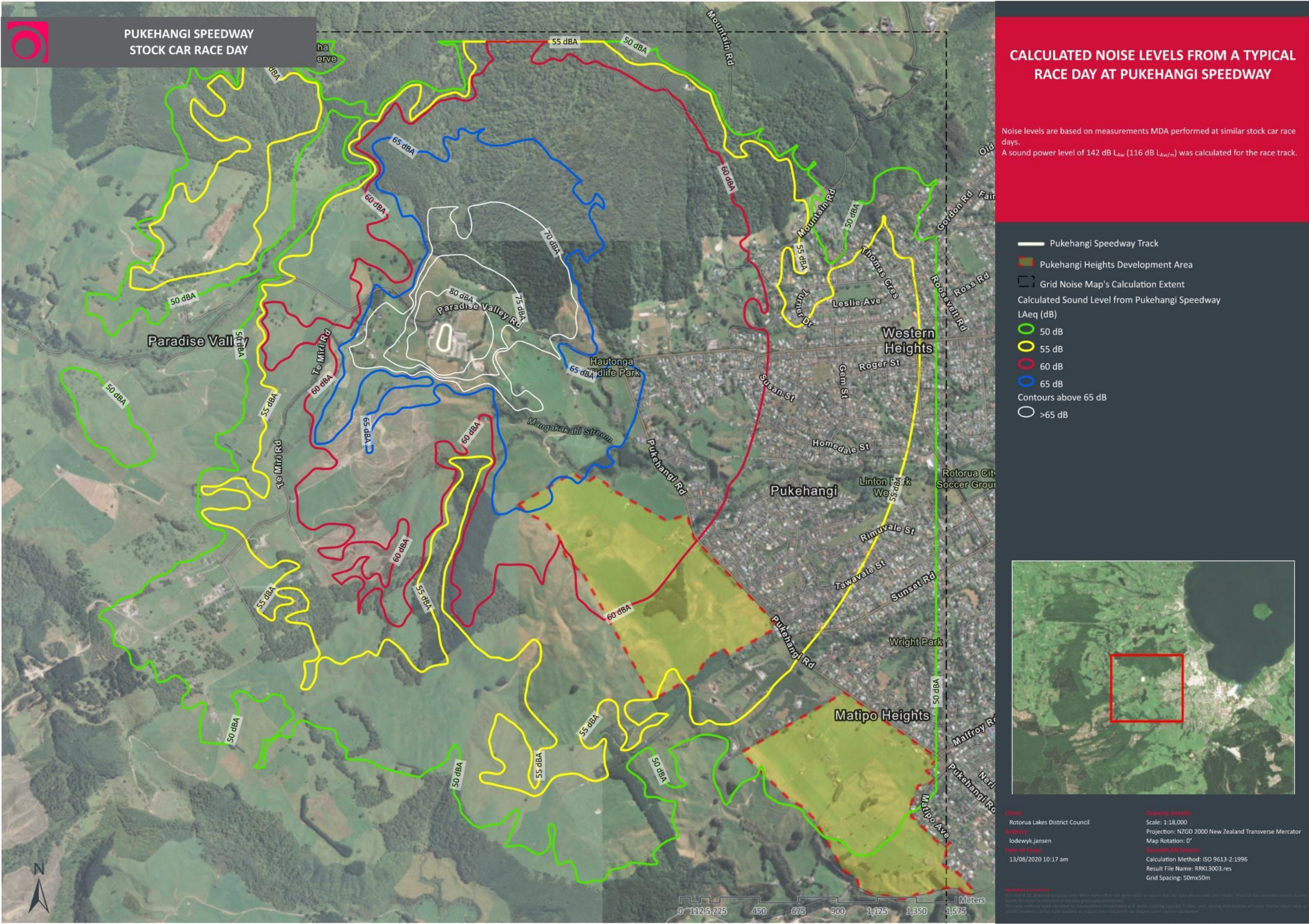
MARSHALL DAY ACOUSTICS LTD



James Bell-Booth

Consultant

APPENDIX A INDICATIVE SPEEDWAY NOISE CONTOURS



APPENDIX B QUESTIONS AND RESPONSES ON SPEEDWAY ACTIVITY

1. How many events (races and practice sessions) occur per year?
20 Race Meetings. Some of these are two nights over one weekend which are counted as two meetings. Plus at least 5 Practise meetings on a separate date.
2. Is there a typical 'season'? (e.g from October to March)
The Race Season starts with day time practices from 10th September through to the end of April
3. Do any events ever occur outside of the typical season?
Currently we do not have any race meetings outside the season but can foresee up to 2 in the future. Other organizations do hire the venue during the entire year as per No. 8
4. What is the typical duration of each event? (e.g gates open at xx:xx, practice/qualifying/racing starts at xx:xx, racing finishes at xx:xx, gates close at xx:xx)
Typically 8 occasions in any one season we have a day time practise of up to 3 hours between the hours of 12pm and 5pm.. The meetings start times vary between 5pm and 7.30pm and typically take up to 4 hours to complete, however there are the odd occasions when for some reason ie inclement weather that we get delayed and the meeting may run 2 hours longer. On at least four occasions each season when we have our larger meetings the gates will open to the public at 2pm, for our ordinary meetings the gates open to the public at 3 and the meeting is concluded and the public have left by 11pm, unless there has been weather or other unforeseen delays as above whereby the meeting could be extended by up to 2 hours depending on the start time.
5. What occurs in a typical program for an event (i.e. :
 - a. how many practice/qualifying/race sessions?
Between 15 and 23 races per meeting
 - b. What is the duration of each session
Races generally last for between 5 and 7 minutes but if there is a stoppage they can be longer
 - c. What types of vehicles are participating in each session
All types of Speedway Vehicles contracted to Speedway New Zealand
 - d. How many vehicles may be participating in each session
Between 10 and 30 as noted below
6. Club records indicate that the following classes of vehicle hold records at the speedway (and therefore have at some point in time participated in an event):

	<u>Times Raced per season</u>	
a. Superstocks	20	Maximum cars 30 per race
b. Stockcars	20	Maximum cars 32 per race
c. Streetstocks	14	Maximum cars 28 per race
d. Youth mini stocks	24	Maximum cars 28 per race
e. Super Saloons	10	Maximum cars 20 per race
f. Saloons	10	Maximum cars 20 per race
g. Production saloons	14	Maximum cars 20 per race
h. Six Shooter	12	Maximum cars 20 per race
i. TQ Midgets	0-1	Invitation Maximum cars 20 per race
j. Sprintcars	0-1	Invitation Maximum cars 20 per race
k. Minisprints	0-1	Invitation Maximum cars 20 per race
l. Modified	12	Maximum 20 cars per race

Do all of these classes regularly compete at the speed way? If some are less regular than others please indicate which and give an estimate of how often they typically compete.

Other classes contracted to Speedway NZ that may compete at some stage are Solo or Side car Motorcycles and Midgets and Quarter Midgets

7. Do you anticipate that any other class or vehicle type may compete in the future at the speedway?
Other types of Speedway Vehicles may be added in the future but there wouldn't be any extra races per race meeting and they would have to comply with Speedway NZs current noise limits as set for the classes above.
8. Do you anticipate/intend to hold more and/or different motorsport events in the future?
We do get approached often for various events, but none for the next season we are aware of at this stage.
During the entire year we currently host events like the Rotorua Vintage Car Club Swap Meet. Whilst it does not generate a lot of noise from the event there is a lot of traffic that attend the Meet.
The Sulphur City Motorcycle Club lease one of our buildings and they run events at the track or often meet at the track after a run.
Other organizations regularly using the facility are Rotorua Dogs Sports, the NZ Motorhome Association and the Clubrooms are Leased out for various social functions.
9. Have you ever measured sound levels from your facility?
The Club has during the last 20 years done our own at the boundary for our personal records, but of course these have not been done with a decibel Meter manufactured for accurate readings that could be used for Council purposes. Today's Superstocks which are the noisiest cars were called Stockcars when the original consent was granted, and are individually much quieter now, as those cars never ran mufflers. Speedway New Zealand do the on track testing during the meetings. Superstocks due to their engine configuration and exhaust system exceed the SNZ Decibel limit by up to 5dBA. We (and other clubs) have found it impractical to further reduce the noise from these cars
Sound is not only generated by the cars it comes from the PA system at all the events we hold which is also part of the original consent.
10. Have you ever received complaints about noise from the speedway? If so, from who?
Several years ago there was one phone call that was resolved through mutual planning of dates, but of recent times we have only had one complaint that came through Rotorua Lakes Council last year.
11. Have you ever consulted with your neighbours about noise levels from the speedway?
We have consulted with our closest neighbours and they have never had an issue.
12. What other speedways in New Zealand are comparable (in size and event types) to yours?
There are 22 Speedway New Zealand tracks around the Country and many more affiliated to CTRA, some who run more meetings and some that run less.
Closest comparison in the North Island would be Waikaraka Park, Huntly, Palmerston North, Hawkes Bay, Bay Park or Wellington.