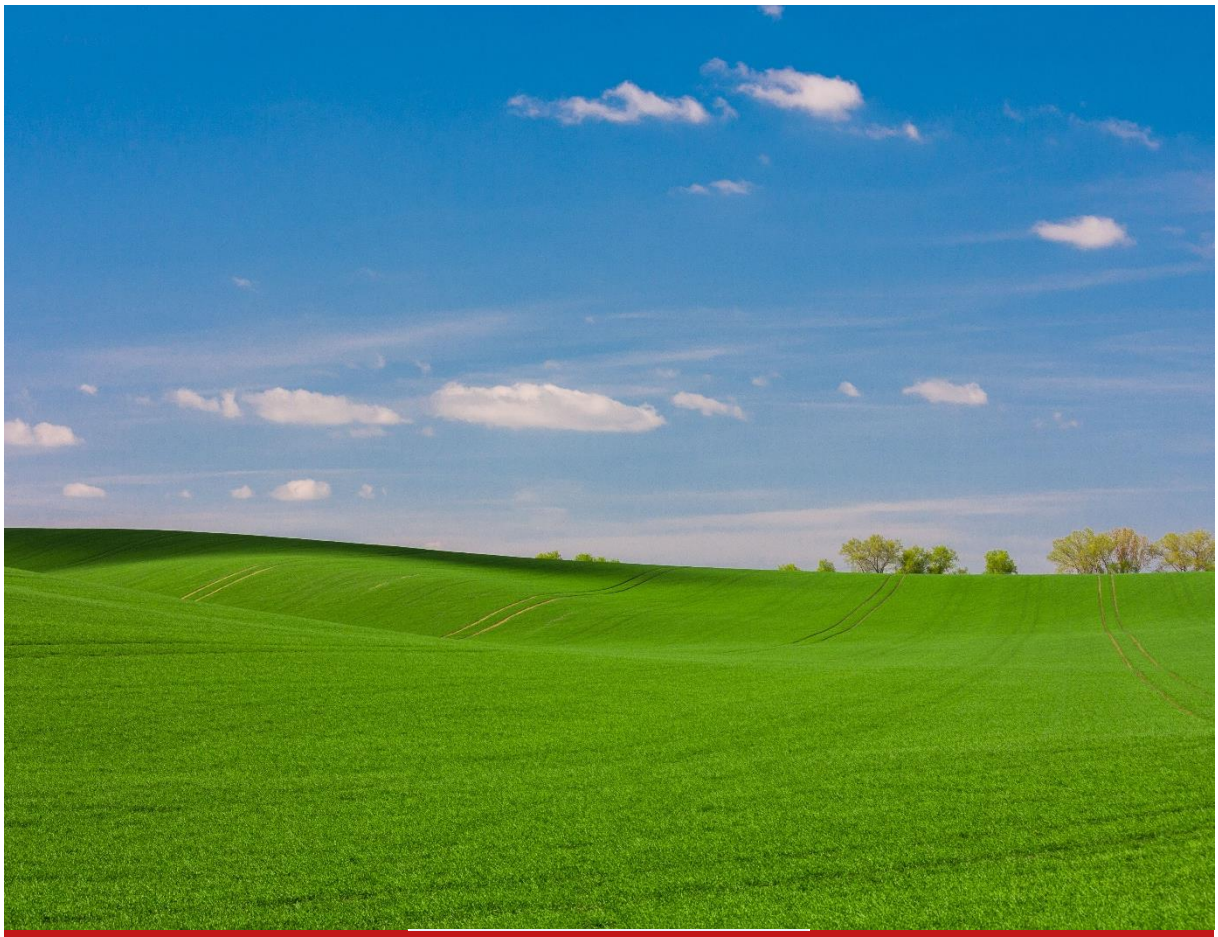
acoustic engineering services

www.aeservices.co.nz
office@aeservices.co.nz
Auckland +64 9 917 0369
Wellington +64 4 890 0122
Christchurch +64 3 377 8952



Report Number: AC19243 – 02 – R3

Birchs Road Park, Prebbleton

Assessment of Environmental Noise Effects

Prepared for:
Phillip Millar
Selwyn District Council
2 Norman Kirk Drive
ROLLESTON 7643

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ACENZ

Association of Australasian Acoustical Consultants

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Document Acceptance

Author	Signature
Aaron Zhao *ME (Mech)* Acoustic Engineer	
Reviewer	**Signature**
Ms Clare Dykes *MBSc, MASNZ* Senior Acoustic Engineer	
Approver	**Signature**
Dr Jeremy Trevathan *PhD (Acoustic) BE Hons (Mech)* Principal Acoustic Engineer	

Table of Contents

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1.0 BACKGROUND

Acoustic Engineering Services (AES) has been engaged by the Selwyn District Council (SDC) to provide acoustic engineering advice in relation to the proposed Births Road Park, in Prebbleton, as part of the Notice of Requirement to designate the site.

The purpose of this precinct is to provide an outdoor recreational facility / park for increasing demand driven by population growth in Prebbleton and Lincoln area.

We have based our analysis on the following:

- Email correspondence with Phillip Millar titled *Request for Quote - Prebbleton New Park Noise Report*, dated the 21st of August 2019 and the 4th of September 2019.
- Master plan titled *Birchs Road Park Draft Concept Masterplan*, as prepared by Global Leisure Group and received on the 30th of October 2019.
- Traffic assessment report titled *Integrated Transport Assessment prepared for Selwyn District Council, Prebbleton Park*, as prepared by Novo Group Ltd, and dated the 30th of October 2019.

1.1 Site and surrounding area

The new Birchs Road Park is proposed to be located at 27 Hamptons Road to the south of the Prebbleton town centre. The site is located in the Inner Plains (IP) zones as defined by Selwyn District Plan, as are the adjoining sites to the north, west, south and east, with Living 3 zoned sites to the northwest across the intersection of Hamptons Road and Birchs Road, as shown in figure 1.1 below.

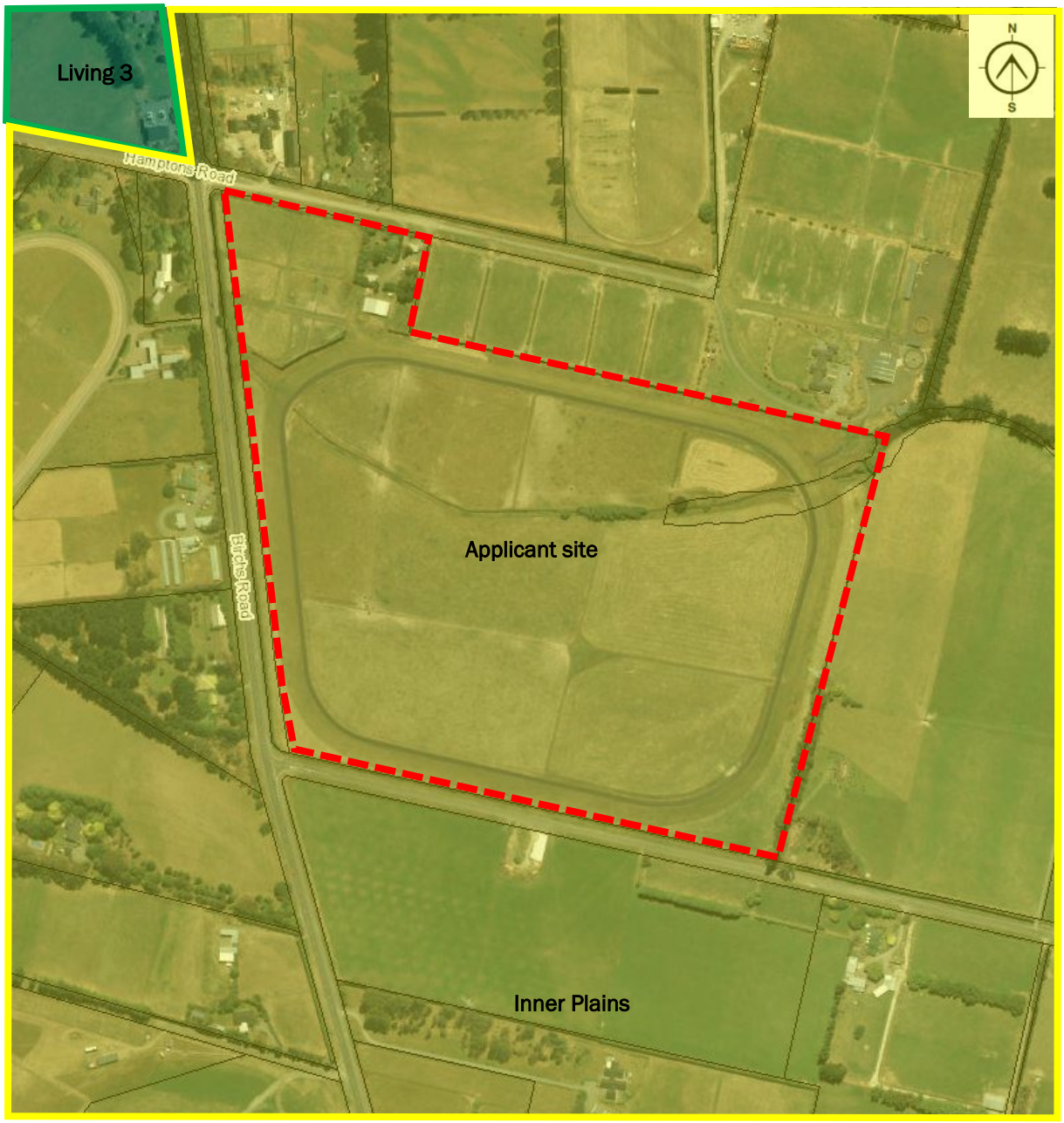

Figure 1.1 – Location of the Birchs Road Park site

1.2 Proposed activities

The proposed Birchs Road Park will be a 22 hectare large scale community park that aims to promote adventure, wilderness and play. We note that development of the site is expected to occur incrementally with two stages, as shown in figure 1.2 below. Final staging will depend on budget allocation. As such, details of various activities when the park eventually becomes operational may vary somewhat from those described below. However, currently the two stages are expected to be as follows:

Stage 1:

- 3 full size sports fields and one intermediate / junior sized field, which are potentially used for football, rugby and cricket training and competition.

- A fenced off-lead Dog Exercise Area.
- A youth space next the main carpark area.
- A main building facility with drinking fountains, shelter, public toilets and change rooms (a clubroom may be considered in the future).
- 250 carparks in the main carpark area next to Birchs Road, and 35 – 45 carparks at the Dog Exercise.

Stage 2

- 3 – 4 junior fields (or 1 – 2 full-size equivalent) as and when demand requires their establishment.
- Potential development of "The Meadow" based on emerging need (future use to be determined).

Based on correspondence, we understand that the sports fields are expected to be used for football, rugby and cricket competitions from 0730 to 2000 hours on weekends, with some evening games until 2200 hours on rare occasions. Training is expected until 2200 hours on weekdays.

Figure 1.2 – Proposed site layout

2.0 ACOUSTIC CRITERIA

The Resource Management Act requires consideration of the significance of any adverse effects associated with the proposal. Guidance as to the significance of any adverse noise effects may be obtained from several sources.

2.1 District Plan noise standards

As described in section 1.1 above, the site is zoned Inner Plains with the surrounding area comprised of a mixture of living and rural zones.

The noise standards which apply to the site are described in the Selwyn District Plan – *Rural Volume – Rules and Definitions – C9 Activities*; and are as follows:

9.16.1 ...any activity shall be conducted so as to comply with the noise limits and within the time frames stated in the following tables in order to be a permitted activity:

Table C9.2 – Maximum noise limits at any Living Zone boundary

7.30am – 8.00pm *55 dBA L_{10} / 85 dBA L_{max}*

8.01pm – 7.29am *40 dBA L_{10} / 70 dBA L_{max}*

Table C9.3 – Noise limits assessed at the notional boundary of any dwelling, rest home, hospital, or classroom in any educational facility except where that dwelling, rest home, hospital or classroom is located within a Living zone

7.30am – 8.00pm *60 dBA L_{10} / 85 dBA L_{max}*

8.01pm – 7.29am *45 dBA L_{10} / 70 dBA L_{max}*

However, Rule 9.16.6 then states that noise from any motor vehicle or any mobile machinery (including farm machinery and stationary equipment not fixed to the ground) is exempt from the above noise limits.

2.2 Existing noise environment

Aaron Zhao of AES visited the site between 1000 and 1100 hours on the 1st of September 2019 to observe the existing ambient noise environment. During this time, the traffic flow on Birchs Road was intermittent (ranging from 6 – 10 cars per minute and 1 bus once in a while). In addition to the dominant traffic noise from Birchs Road, the predominant noise source audible in the area was bird noise. At the same time, the traffic flow on Leadleys Road was low (1 – 2 cars per minute), with no vehicle along Hamptons Road to the north.

Other noise sources audible in the area from time to time are likely to include:

- Noise from cyclists in the bike lane;
- Noise from people talking on the street;
- Noise from residential activities on the adjacent sites.

Measurements were undertaken close to the boundaries of the site alongside Hamptons Road, Birchs Road and Leadleys Road. During our visit, the following ambient noise levels were recorded:

- Noise levels in the order of 71 dB L_{Aeq} were recorded adjacent to the site on Birchs Road due to the traffic along Birchs Road.

- Noise levels of 43 to 62 dB L_{Aeq} were recorded adjacent to the site on Hamptons Road at 15 – 180 metres from Birchs Road with the dominant noise from traffic on Birchs Road.

- Noise levels of 53 to 58 dB L_{Aeq} were recorded adjacent to the site on Leadleys Road at a minimum 80 metres from Birchs Road with the dominant noise from traffic on Leadleys Road. When no vehicles were travelling past the site on Leadleys Road, noise levels of 37 dB L_{Aeq} were measured at the eastern boundary of the site where the traffic from Birchs Road was inaudible.

2.3 New Zealand Standard 6802

NZS 6802:2008 *Acoustics – Environmental noise* outlines a guideline daytime limit of 55 dB $L_{Aeq\ (15\ minute)}$ (approximately 57 dB L_{A10}) and a night-time noise limit of 45 dB $L_{Aeq\ (15\ minute)}$ (approximately 47 dB L_{A10}) for "the reasonable protection of health and amenity associated with the use of land for residential purposes". A night-time noise limit of 75 dB L_{AFmax} is outlined in the Standard with no L_{AFmax} limit during the daytime period.

We note that the Standard provides guidelines in section 8.3 regarding 'daytime' and 'night-time' for use in situations where these are not specified. The timeframe recommended is 0700 to 2200 hours for daytime, and 2200 hours to 0700 hours the following day for night-time.

The Standard also describes how a – 3 dB adjustment may be applied to sound received for less than 50 % of the daytime period, and a – 5 dB adjustment may be applied to sound received for less than 30 % of the daytime period.

2.4 World Health Organisation

Guidelines for Community Noise[1], a document produced by the World Health Organisation based on extensive international research recommends a guideline limit of 55 dB $L_{Aeq\ (16\ hours)}$ (approximately 57 dB L_{A10}) to ensure few people are seriously annoyed in residential situations. A guideline limit of 50 dB L_{Aeq} (approximately 52 dB L_{A10}) is recommended to prevent moderate annoyance. A guideline night time limit of 45 dB L_{Aeq} (approximately 47 dB L_{A10}) is recommended to allow occupants to sleep with windows open.

2.5 Other District Plan noise limits

We are familiar with existing noise rules for many other District Plans throughout New Zealand, and consider these to provide some context.

In particular, the specified hours for the daytime and night-time periods vary considerably between districts, with some also providing an 'evening' period. However, the period between 0700 and 2200 hours is most commonly used to define daytime, and 2200 hours to 0700 hours for night time.

Therefore, the current Selwyn District Plan noise rules which apply at the Living zone and Rural zones are more restrictive in terms of the hours assigned to the day, being 0730 to 2000 hours, only a 12 and a half hour period, whereas most District Plans, NZS 6802 and the WHO anticipate or provide for 15 hours of daytime.

We also note that it is more common in other District Plans to utilise the L_{eq} descriptor for intrusive or continuous noise.

[1] Edited by Berglund, B *et al. Guidelines for community noise.* World Health Organization 1999.

2.6 National Planning Standards

New Zealand National Planning Standards (2019) is a document which seeks to standardise aspects of regional and district plans, and other documents required under the Resource Management Act. Noise and vibration metrics are specifically discussed, with all District or Resource Management Plans are required (when going through an update) to adopt various stated metrics.

Section 15 *Noise and Vibration Metrics Standard* in the National Planning Standards outlines the noise and vibration standards required to be referenced in District and Resource Management Plans. The National Planning Standard references New Zealand Standard NZS 6802:2008 *Acoustics – Environmental Noise* which uses the L_{eq} not L_{10} noise descriptor.

2.7 Discussion regarding appropriate noise levels

In general, where noise levels comply with the District Plan noise limits at neighbouring residential sites we would consider the effects to be acceptable; however, we note the following:

- The L_{10} descriptor referred to in the Selwyn District Plan is the noise level that is exceeded 10 % of the time, and therefore is directly related to the time period selected, the length of time that the noise source is on the site and the noise level they generate. This descriptor does not always well represent noise effects and is very difficult to calculate for intermittent noise sources, and hence is no longer used in the more recent standards.

- The current Selwyn District Plan noise rules which apply at the living and rural zones are restrictive in terms of the hours assigned to the day, being 0730 to 2000 hours, only a 12 and a half hour period, whereas most District Plans, NZS 6802 and the WHO anticipate or provide for 15 hours of daytime.

Based on the above, we consider noise at the following levels (measured and assessed in accordance with NZS 6801:2008 and NZS 6802:2008) when received at the notional boundary of the dwellings on the surrounding sites zoned Inner Plains and at the boundary of the Living 3 zoned sites, will have a minimal adverse effect:

0700 to 2200 hours	55 dB L_{Aeq}
2200 to 0700 hours	45 dB L_{Aeq} / 70 dB L_{AFmax}

3.0 NOISE GENERATED BY THE ACTIVITY

Noise sources which may be associated with the use of Birchs Road Park are expected to be:

- Vehicles travelling about and parking on the site (engine noise, exhaust noise, road/tyre noise, reversing beepers and door slams)
- Heavy vehicles travelling to the Service / Maintenance Area
- Sporting activities such as Football, Rugby, Cricket and the like
- Spectators and referee whistles associated with sporting events
- Children playing in the Youth Space
- Dogs barking in the Dog Exercise Area
- Post-match gatherings which may occur from time to time in the main building

SoundPlan computational noise modelling based on ISO 9613 *Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation* has been used to calculate the propagation of noise from the site, taking into account the topography of the area, and sound power levels for each of the noise sources.

With regard to cumulative noise, we expect that peak periods of the main building occupancy, traffic noise, maintenance and sport noise from the site will not occur concurrently and so the noise levels outlined below represent the worst-case levels expected at any given time.

We have considered the Stage 1 and Stage 2 activities (as discussed above) on the site together in our analysis.

3.1 Noise from activities between 0700 and 2200 hours

3.1.1 Noise from sports and recreation activities

Based on correspondence, we understand that sports fields will be used for Rugby (50 players per field), Football (30 players per field) and Cricket (50 people over 2 fields) with half of these numbers for each junior field and as many spectators watching the games as players. We note that the use of the 'Meadow' area has not been confirmed and has been assumed to be used for Rugby which is the worst case of these sports.

We have considered a peak operating scenario based on a busy Saturday morning for events or a weekday evening for training with the following activities (and associated noise sources) occurring simultaneously within the park:

- Senior Rugby – All three full size fields in use (approximately 50 players plus 50 spectators, officials and club volunteers for each field, with half the spectators speaking in raised voices on the sidelines, as well as 4 players / coaches speaking in raised voices)
- Junior Rugby – All five junior fields in use (approximately 25 players plus 25 spectators, officials and club volunteers for each field, with half the spectators speaking in raised voices on the sidelines, as well as 4 players / coaches speaking in raised voices)
- Meadow area – Used for a senior rugby game (approximately 50 players plus 50 spectators, officials and club volunteers, with half the spectators speaking in raised voices on the sidelines, as well as 4 players / coaches speaking in raised voices)
- Youth space – 6 children with half speaking in raised voices

- Fenced Dog Exercise Area – Approximately 15 dogs barking for 1 minute out of 15 minutes

We note the following:

- We have previously measured a noise level of 98 dB L_{Aeq} at 1 metre from approximately 15 dogs barking. We have used this in our analysis and have assumed that the dogs would only bark for 1 minute out of the 15 minute period in the fenced Dog Exercise Area. This is a conservative assumption and we would expect the actual noise levels from the Dog Exercise Area to be lower.

- Expected noise levels due to the conversation of players and spectators have been based on the American National Standards Institute Standard ANSI S3.5 – 1997 *Methods for calculation of the Speech Intelligibility Index*, which contains information on the typical speech levels for both male and female speakers. Based on average values, for a raised voice effort, the sound power of a speaker may be deduced to be 78 dB L_{wA}.

Based on the above, the expected worst-case noise levels are shown in figure 3.1 below.

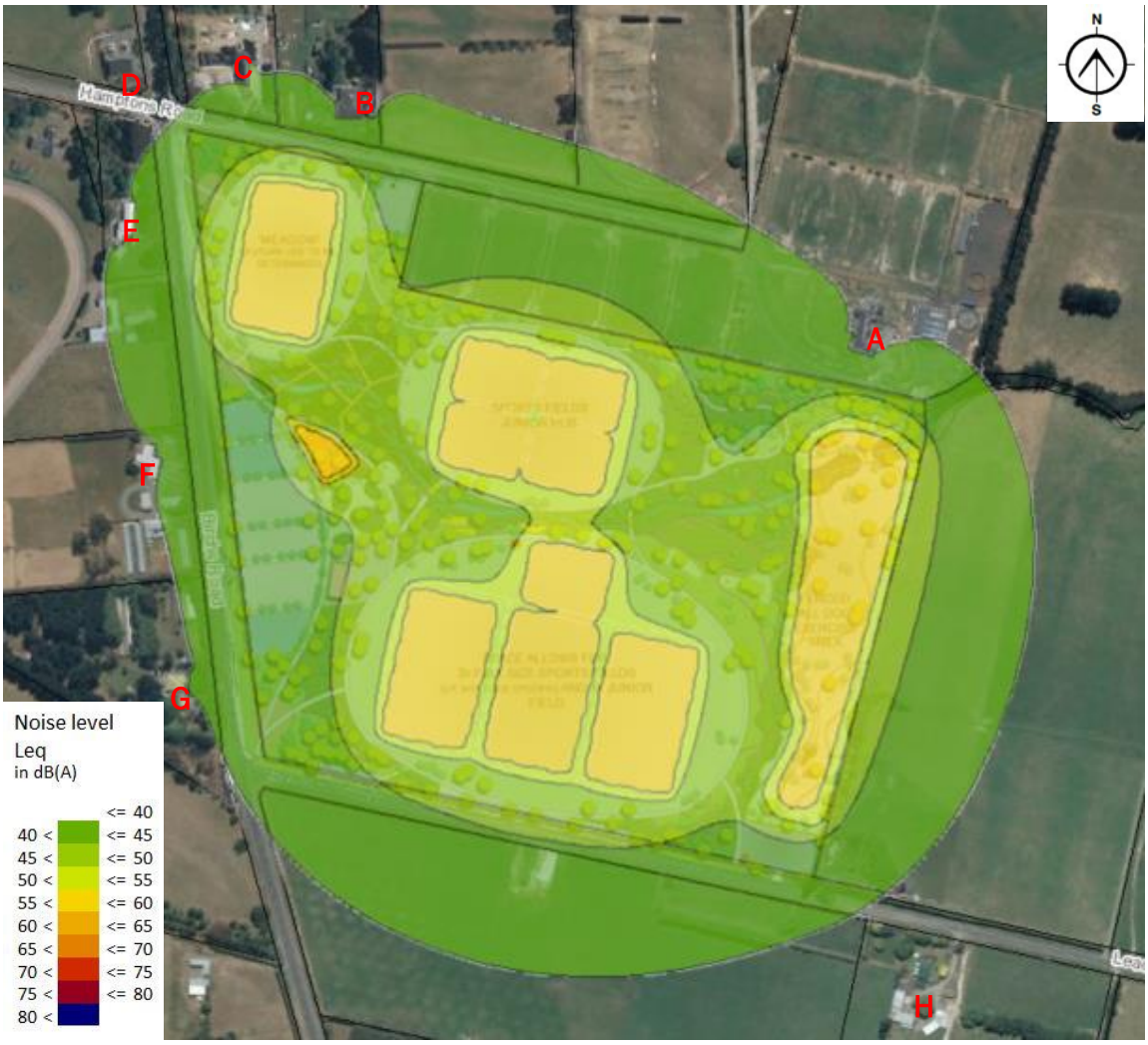

Figure 3.1 – Noise emissions associated with peak activities in a worst case 15 minute period

Based on the modelling, the worst-case noise levels shown in table 3.1 are expected at the nearest residential boundary or notional boundary labelled (A) to (H) in figure 3.1 above.

Table 3.1 – Noise levels from peak activities in a worst-case 15 minute period

Location	Noise levels (dB L_{Aeq})
A: Notional boundary of dwelling at 2 Hamptons Road	43
B: Notional boundary of dwelling at 32 Hamptons Road	43
C: Notional boundary of dwelling at 42 Hamptons Road	42
D: Site boundary of 116 Birchs Road	39
E: Notional boundary of dwelling at 142 Birchs Road	42
F: Notional boundary of dwelling at 160 Birchs Road	41
G: Notional boundary of dwelling at 176 Birchs Road	41
H: Notional boundary of dwelling at 333 Leadleys Road	39

We therefore expect noise levels of less than 55 dB L_{Aeq} between 0700 and 2200 hours at all neighbouring noise sensitive locations. We expect the effects of this noise to be minimal.

With regard to District Plan compliance, the noise limits within the District Plan are expressed in terms of the L_{A10} parameter (rather than the L_{Aeq} parameter recommended in most recent guidance) and L_{AFmax} limits. Based on our noise measurements of the rugby activity, there is a + 3 dB difference between the L_{Aeq} and L_{A10} and a + 22 dB between the L_{Aeq} and L_{AFmax}. Based on these adjustments, we have the following comments:

- Between 0730 and 2000 hours, we expect compliance with the District Plan noise limits of 60 dB L_{A10} / 85 dB L_{AFmax} at the notional boundary of all neighbouring properties in the Inner Plains zone and 55 dB L_{A10} / 85 dB L_{AFmax} at the site boundary of Living 3 zoned properties.

- If this worst-case scenario activity was to occur between 0700 and 0730 hours or between 2000 and 2200 hours, the noise limit of 70 dB L_{AFmax} is expected to be complied with at all surrounding properties; however the noise limit of 45 dB L_{A10} is expected to be exceeded by 1 dB at the notional boundary of dwellings at 2 and 32 Hamptons Road, and the noise limit of 40 dB L_{A10} would be exceeded by 2 dB at the site boundary of 116 Birchs Road.

However, as discussed above, noise levels of less than 55 dB L_{Aeq} are expected at the closest noise sensitive locations and we therefore expect the associated noise effects to be minimal.

3.1.2 Break-out noise from the building

Based on correspondence, we understand that a building adjacent to the main carpark area on site is proposed to be used as changing rooms, public toilets and the like. We also expect that it may include a communal area which could accommodate post-match functions. Based on the use of the building, we have assumed a worst-case scenario based on the following activities in the building:

- A post-match gathering in the building with internal noise level of up to 85 dB L_{Aeq}

- The doors open on side facing the fields

Based on above, the expected worst-case noise levels are shown in figure 3.2 below.

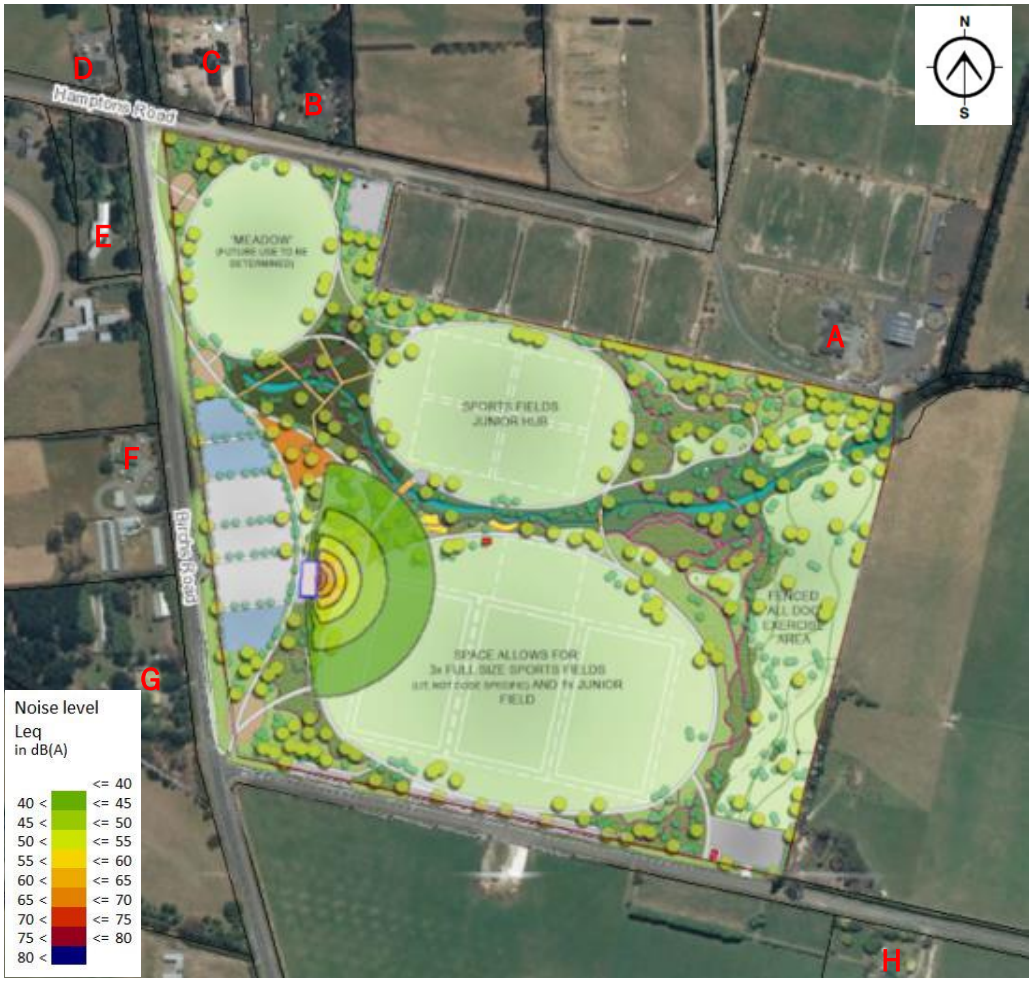

Figure 3.2 – Noise emissions associated with the activities in the building

Based on the modelling, the worst-case noise levels shown in table 3.2 are expected at the nearest residential boundary or notional boundary labelled (A) to (H) in figure 3.2 above.

Table 3.2 – Break-out noise levels from the building

Location	Noise levels (dB L_{Aeq})
A: Notional boundary of dwelling at 2 Hamptons Road	26
B: Notional boundary of dwelling at 32 Hamptons Road	28
C: Notional boundary of dwelling at 42 Hamptons Road	< 20
D: Site boundary of 116 Birchs Road	< 20
E: Notional boundary of dwelling at 142 Birchs Road	< 20
F: Notional boundary of dwelling at 160 Birchs Road	< 20
G: Notional boundary of dwelling at 176 Birchs Road	20
H: Notional boundary of dwelling at 333 Leadleys Road	24

We therefore expect noise levels of less than 55 dB L_{Aeq} between 0700 and 2200 hours. We expect the effects of this noise to be minimal.

With regard to District Plan compliance, we have considered a + 3 dB difference between the L_{Aeq} and L_{A10} for this type of sound. Based on this adjustment, full compliance with the District Plan L_{A10} noise limits is expected with both the daytime and night-time noise limits at the notional boundary of all neighbouring properties in the Inner Plains zone and at the site boundary of Living 3 zoned properties.

Due to the nature of the activities we also expect full compliance with the District Plan L_{AFmax} noise limits.

3.1.3 Noise from vehicle movements

We understand that 250 carparks are proposed in the main carpark area, with 35 – 45 carparks adjacent to the fenced Dog Exercise Area.

Based on the traffic assessment report, it is expected there will be a maximum of 371 vehicle movements (246 movements for Rugby / Soccer, 20 movements for Passive Recreation and 105 for Dog Park). Assuming the vehicle movements during a worst-case period were evenly spaced over the hour, 93 vehicle movements would take place during a worst-case 15 minute period between 0700 and 2200 hours.

Based on the purpose of the vehicle movements, the following vehicle movements in each carpark area have been assumed in our calculations in a worst-case 15 minute period:

- 58 vehicle movements in the main carpark area
- 35 vehicle movements in the carpark area adjacent to the fenced Dog Exercise Area

We note that a typical light vehicle manoeuvring in a carpark setting is likely to emit a sound power of less than 90 dB L_{wA} with a speed of 10 km/hr.

Based on the above, the following worst-case noise levels shown in table 3.3 are expected at the nearest residential boundary or notional boundary.

Table 3.3 – Noise levels from the vehicle movements

Location	Noise levels (dB L_{Aeq})
A: Notional boundary of dwelling at 2 Hamptons Road	32
B: Notional boundary of dwelling at 32 Hamptons Road	35
C: Notional boundary of dwelling at 42 Hamptons Road	34
D: Site boundary of 116 Birchs Road	34
E: Notional boundary of dwelling at 142 Birchs Road	38
F: Notional boundary of dwelling at 160 Birchs Road	49
G: Notional boundary of dwelling at 176 Birchs Road	47
H: Notional boundary of dwelling at 333 Leadleys Road	40

We therefore expect noise levels of less than 55 dB L_{Aeq} between 0700 and 2200 hours. We expect the effects of this noise to be minimal.

With regard to District Plan compliance, noise from motor vehicles is excluded from the District Plan noise limits and therefore full compliance is expected for this aspect of the activity.

3.1.4 Noise from Service / Maintenance Area

We understand that the Service / Maintenance Area located to the north of the site is to be used for storage of maintenance vehicles and materials. The maintenance vehicles will be delivered to the site by a tractor or another heavy vehicle. We note that based on correspondence, irrigation pump systems are also expected to be located within this area within a pump house (similar to the pump house built for the irrigation system for the Foster Park in Rolleston) and therefore we do not expect the noise from the pump house would be problematic. Therefore, the main source in the Service / Maintenance Area is expected to be a heavy vehicle (such a tractor) manoeuvring in this area.

We have assumed a single heavy vehicle movement in a 15 minute period in the Service / Maintenance Area. We note that we have based our analysis on a heavy vehicle with a sound power of 108 dB L_{wA} travelling at 10 km/h on site.

Based on the above, noise levels of 44 dB L_{Aeq} or less are expected at the notional boundary of the surrounding dwellings. We expect the effects of this noise to be minimal.

As above, noise from motor vehicles is excluded from the District Plan noise limits and therefore full compliance is expected for this aspect of the activity.

3.2 Noise from activities between 2200 and 0700 hours

We expect that use of the fenced Dog Exercise Area and vehicle movements will be the primary noise sources between 2200 and 0700 hours.

3.2.1 Noise from dog barking

We have considered the same assumptions for the dogs as discussed above. Based on this, the expected worst-case noise levels are shown in figure 3.3 below.

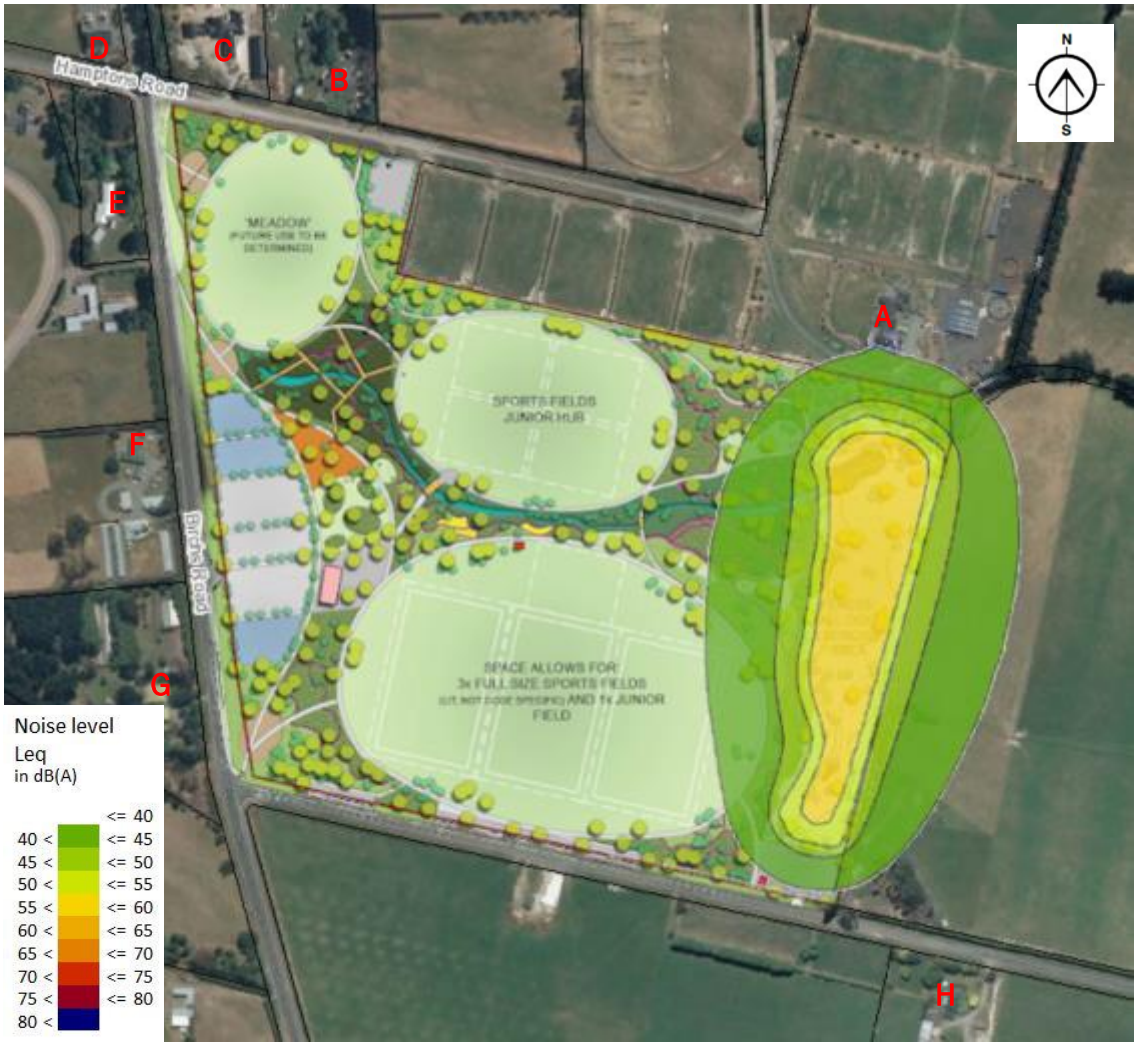

Figure 3.3 – Noise emissions associated with the use of the dog exercise area between 2200 and 0700 hours

Based on above, the following worst-case noise levels shown in table 3.4 are expected at the nearest residential boundary or notional boundary labelled (A) and (H) in figure 3.3 above.

Table 3.4 – Noise levels from dogs barking

Location	Noise levels (dB L_{Aeq})
A: Notional boundary of dwelling at 2 Hamptons Road	42
B: Notional boundary of dwelling at 32 Hamptons Road	27
C: Notional boundary of dwelling at 42 Hamptons Road	25
D: Site boundary of 116 Birchs Road	25
E: Notional boundary of dwelling at 142 Birchs Road	27
F: Notional boundary of dwelling at 160 Birchs Road	28
G: Notional boundary of dwelling at 176 Birchs Road	29
H: Notional boundary of dwelling at 333 Leadleys Road	34

We therefore expect noise levels of 45 dB L_{Aeq} or less to occur between 2200 and 0700 hours. We expect the effects of this noise to be minimal.

With regard to District Plan compliance, as discussed above, we have assumed dogs barking for 1 minute out of a 15 minute period and therefore less than 90 seconds within any 15-minute period. While dogs barking would potentially generate instantaneous noise levels in excess of 45 dBA at the neighbouring properties boundaries, they are not expected to spend enough time barking on the site to influence the L_{A10} noise level, and therefore compliance with the night-time noise limits of 40 dB L_{A10} and 45 dB L_{A10} is expected at all neighbouring properties. Compliance with the District Plan noise limit of 70 dB L_{AFmax} is also expected at all neighbouring properties.

3.2.2 Noise from vehicle movements

We have assumed two vehicle movements via each vehicle entrance point to the main carpark area and carparks adjacent to the fenced Dog Exercise Area (4 vehicle movements in total) during a 15 minute period in the early morning or night-time period.

Based on above, the worst-case noise levels shown in table 3.5 are expected at the nearest residential boundary or notional boundary.

Table 3.5 – Noise levels from the vehicle movements before 0700 hours

Location	Noise levels (dB L_{Aeq})
A: Notional boundary of dwelling at 2 Hamptons Road	< 20
B: Notional boundary of dwelling at 32 Hamptons Road	< 20
C: Notional boundary of dwelling at 42 Hamptons Road	< 20
D: Site boundary of 116 Birchs Road	< 20
E: Notional boundary of dwelling at 142 Birchs Road	< 20
F: Notional boundary of dwelling at 160 Birchs Road	31
G: Notional boundary of dwelling at 176 Birchs Road	22
H: Notional boundary of dwelling at 333 Leadleys Road	20

We therefore expect noise levels of less than 45 dB L_{Aeq} at all neighbouring noise-sensitive sites between 2200 and 0700 hours.

We have also considered noise levels generated by door slams and engine starts on the site. Calculations have been based on a maximum sound power level of 92 dB $L_{wA\ max}$. The highest L_{AFmax} levels are shown in table 3.6 below.

Table 3.6 – Noise levels from the door slams and engine starts on the site

Location	Noise levels (dB L_{AFmax})
A: Notional boundary of dwelling at 2 Hamptons Road	33
B: Notional boundary of dwelling at 32 Hamptons Road	38
C: Notional boundary of dwelling at 42 Hamptons Road	37
D: Site boundary of 116 Birchs Road	36
E: Notional boundary of dwelling at 142 Birchs Road	42
F: Notional boundary of dwelling at 160 Birchs Road	53
G: Notional boundary of dwelling at 176 Birchs Road	54
H: Notional boundary of dwelling at 333 Leadleys Road	45

These noise levels are less than 70 dB L_{AFmax} between 2200 and 0700 hours.

We therefore expect the effects of this noise to be minimal.

As above, noise from motor vehicles is excluded from the District Plan noise limits and therefore full compliance is expected for this aspect of the activity.

4.0 CONCLUSIONS

Noise from all sources expected to be associated with the proposed Birchs Road Park have been considered.

Based on a review of the Selwyn District Plan, World Health Organisation Guidelines, and NZS 6802, we consider noise at the following levels (measured and assessed in accordance with NZS 6801:2008 and NZS 6802:2008) when received at the boundary of the surrounding residential sites and at the notional boundary of the dwellings on the surrounding rural sites will have a minimal effect on neighbouring properties:

0700 to 2200 hours	55 dB L_{Aeq}
2200 to 0700 hours	45 dB L_{Aeq} / 70 dB L_{AFmax}

Our modelling of noise emissions from the site has confirmed that activities on the site would result in noise levels of less than 55 dB L_{Aeq} between 0700 and 2200 hours and less than 45 dB L_{Aeq} / 70 dB L_{AFmax} between 2200 and 0700 hours at the residential site boundaries and at the notional boundary of the dwellings on the surrounding rural sites.

In terms of compliance with the District Plan, noise from vehicles is excluded from the District Plan noise limits. The relevant sources are the sports and recreation activities, and post-match gatherings. A 1 dB exceedance of the L_{A10} noise limits may occur at the notional boundary of the dwellings at 2 and 32 Hamptons Road with a 2 dB exceedance at the site boundary of 116 Birchs Road if the peak activity on site occurred between 0700 and 0730 hours or between 2000 and 2200 hours. However, as discussed above, the noise levels are expected to be less than the recommended L_{Aeq} noise levels at the neighbouring noise sensitive sites. We would therefore expect the associated noise effects to be minimal.