FINAL REPORT

Centennial Park and Moore Park Trust

Noise Management Plan

30 January 2009

Reference: 0075725RP01 Final

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For and on behalf of Environmental Resources Management Australia
Approved by: _____
Signed: _____
Position: _____
Date _____

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1 INTRODUCTION

This Noise Management Plan (NMP) has been developed in compliance with Variation of Prevention Notice 1078164 issued by the NSW Department of Environment and Climate Change, 4 October 2007.

The NMP applies to concerts, music festivals, cinematic screenings, theatrical performances and any other outdoor events with sound amplification held at venues managed by Centennial Park and Moore Park Trust (CPMPT). These venues are Centennial Park, Moore Park and Queens Park.

1.1 ABOUT THE CENTENNIAL PARK AND MOORE PARK TRUST

Centennial Park was dedicated by Sir Henry Parkes as a public open space in 1888 and was the venue for the inauguration of Federation in 1901. Covering more than 360 hectares, Centennial Park, Moore Park and Queens Park comprise one of the world's finest and most used urban open spaces. Formed in 1983, the CPMPT is a statutory government organisation charged with the care, control and management of Centennial Parklands.

Centennial Parklands incorporates the Moore Park entertainment precinct, a unique premier leisure destination providing important facilities for sport, entertainment and cultural activities for the people of Sydney and New South Wales. Facilities operating in the Moore Park Precinct include the Entertainment Quarter, Royal Hall of Industries, Hordern Pavilion, Fox Studios, Centennial Parklands Equestrian Centre and the adjoining Sydney Football Stadium and historic Sydney Cricket Ground.

The CPMPT is a member of the Moore Park Event Operations Group (MEOG), chaired by the NSW Department of Premier and Cabinet. This working group comprises staff from relevant venues and government agencies responsible for the coordination of event operations and traffic management of the Moore Park Precinct.

1.2 ABOUT THE NOISE MANAGEMENT PLAN

The CPMPT is currently required to comply with DECC Environmental Protection Licence Prevention Notice (No. 1002139) issued on 26 February 2001. This Licence Prevention Notice sets out the operational conditions for outdoor entertainment activities at Centennial Park, Moore Park and Queens Park, to manage noise impacts on nearby communities. The conditions include prescribed noise limits for events, a limit on the number of events per year, the requirement for continuous noise monitoring of events and a process to manage complaints from nearby residents.

The NMP will provide a single instrument which replaces the DECC Licence Prevention Notice and Variation Notices.

The contents of the NMP have been developed in accordance with the requirements specified in the Variation of Prevention Notice 1078164.

1.3 PURPOSE OF THE NOISE MANAGEMENT PLAN

The purpose of the CPMPT Noise Management Plan (NMP) is to identify and implement strategies which will minimise disturbance of residents and other noise sensitive receivers from events such as music festivals, concerts, moonlight cinema and other outdoor events with sound amplification held within the areas managed by CPMPT.

1.4 NOISE MANAGEMENT OBJECTIVES

The objectives of this NMP are to minimise noise impacts arising from major events by:

- Complying with the noise limits set out in this NMP;
- Complying with the time limits for events as set out in this NMP;
- Developing and implementing strategies to reduce noise impacts on the local community;
- Monitoring and reporting on the effectiveness of the mitigation measure implemented in the NMP; and
- Identifying and implementing alternative/new mitigation measures wherever necessary on an annual basis to ensure the NMP's continued effectiveness and promote continuous improvement.

1.5 DEFINITIONS

The definition of a number of frequently used terms are listed below.

a) "**Accredited Acoustical Consultant**" means an acoustical consultant who is a member of one or more of the following organisations: The Association of Australian Acoustical Consultants; The Australian Acoustical Society; or the Institution of Engineers Australia;

b) **"Noise Breach"** means the measured noise level is above specified noise limits, but may or may not be classified as an exceedance due to the exemption for the start of a new act, or where wind speed is above the specified threshold;

c) "**Category 1 Event**" means any event using sound amplification equipment with a crowd capacity less than 1,500 people other than cinematic screenings and theatrical performances using sound amplification equipment held at the Belvedere Amphitheatre;

d) "**Category 2 Event**" means any event using sound amplification equipment with a crowd capacity greater than 1,500 people other than:

   (i) events using sound amplification equipment with a crowd capacity greater than 5,000 people; and

   (ii) cinematic screenings and theatrical performances using sound amplification equipment held at the Belvedere Amphitheatre;

e) "**Category 3 Event**" means any events using sound amplification equipment with a crowd capacity greater than 5,000 people;

f) "**Category 4 Event**" means any cinematic screenings and theatrical performances using sound amplification equipment held within Centennial Parklands at the Belvedere Amphitheatre;

g) "**Concert**" means an event where the primary purpose is musical entertainment involving a *single stage* with continuous amplified musical performance, taking place within a 12 hour period of a single day (including rehearsals);

h) "**Console Operator**" means the person at the sound mixing console (or sound desk), who is in control of the volume of noise emanating from the speakers installed at an event;

i) **"CP"** means Centennial Parklands, which encompasses Moore Park Queens Park and Centennial Park;

j) "**CPMPT**" means the Centennial Park and Moore Park Trust;

k) **"DECC"** means Department of Environment and Climate Change;

l) "**EPA**" means New South Wales Environment Protection Authority now DECC;

m) "Exceedance" means the measured noise level is above and in contravention of specified noise limits and is not exempted due to the start of a new act or wind;

n) "**LAmax**" means A – weighted maximum Root Mean Square (rms) sound pressure level. During noise measurements, this is the absolute highest (maximum) noise level for a given time period. The 'A' frequency weighting scale provides a representation of human response to sound;

LCmax" means C - weighted maximum RMS sound pressure level measured over a one (1) second interval. During noise measurements, this is the absolute highest (maximum) noise level for a given time period. The 'C' frequency weighting scale is relatively flat or contains little adjustment to the raw or linear noise level. This is in an attempt to capture the lower frequency sounds (relevant to music) often referred to being 'more felt than heard';

o) **"Major Event"** means events that fall into Category 3 and 4 events;

p) **"Music Festival"** means an event whose primary purpose is musical entertainment involving continuous amplified music occurring on *multiple stages*, taking place over one or more days (including rehearsals);

q) **"Moonlight Cinema"** means an open air cinema situated at Belvedere Amphitheatre, Centennial Park;

r) "**Rehearsal**" means a rehearsal for a event, conducted outdoors where sound amplification equipment is used as part of the rehearsal;

s) "**Sensitive Receiver**" means places such as residences, schools, childcare centres, hospitals and churches;

t) "**Sound test**" means undertaking acoustic, electro acoustic and electronic testing in order to tune and optimise the sound amplification equipment for an event;

u) "**Working Day**" means Monday to Friday not including public holidays.

2 NOISE MANAGEMENT PLAN METHODOLOGY

The methodological approach used by ERM in preparation of this NMP combines acoustic assessment and social research activities. This provides an understanding of the current amenities of the park and its surround. The key components are:

- Site investigation and review of venue, stage layout and positioning of sound amplification equipment during major events,
- Noise assessment of previous major events,
- Review of existing ambient and background noise levels,
- Review of complaints data held by the CPMPT,
- Study survey,
- Focus groups,
- Stakeholder interviews,
- Newsletter distribution,
- Establishment of phone line and email account,
- Static display and information session,
- Interviews with government agencies.

These are discussed in the following sections.

2.1 SITE INVESTIGATION AND REVIEW OF VENUE, STAGE LAYOUT AND POSITIONING OF SOUND AMPLIFICATION EQUIPMENT DURING MAJOR EVENTS

ERM inspected the three parklands and surrounding areas to assess their geographical implication to noise emission. Venue layout plans, stage configuration and sound equipment layout and configuration for all major events held since 2005 were reviewed. Figure 2.1 shows the site and surrounds for Centennial Parklands.

ERM also assessed the geographical and meteorological impacts on noise emissions through the use of Environmental Noise Modelling Software (ENM). ENM utilised digital topographical and meteorological data in order to model noise propagation characteristics and noise levels at residential locations. Noise modelling is described in detail in *Section 6.2*.

Figure 2.1 Site and Surrounds

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2.2 *NOISE ASSESSMENT OF PREVIOUS MAJOR EVENTS*

Between February 2005 and September 2007, three (3) concerts and six (6) music festivals have been held within Centennial Parklands (CP). The locations of major events were: Kippax Lake in Moore Park, and Mission Fields/McKay 4 and the Parade Grounds/Brazilian Fields in Centennial Park. The Jack Johnson concert was held at Mission Fields whilst Good Vibrations music festival 2005 and 2006 were held at Mission Fields and McKay 4. The Parklife music festival was held at Kippax Lake in 2006 and 2007. The Good Vibrations music festival 2007 and the V Festival music festival 2007 were both held at the Parade Grounds/Brazilian Fields.

For the above major events the CPMPT operates under the conditions stipulated in Prevention Notice No. 1002139, that noise from Category 3 events (main event, rehearsal(s) and/or sound test(s)) is continuously monitored in specified locations. Independent acoustic monitoring reports are produced for each event. ERM reviewed these monitoring reports for events held since 2005. The acoustic monitoring reports were assessed in terms of impacts on noise sensitive receivers.

A summary for each event, based primarily on the acoustic reports, is as follows:

Good Vibrations 2005 (multi-stage festival) – Mission Fields, Centennial Park

Measured noise levels from the festival were above noise limits numerous times throughout the festivals duration. However, most measurements were within 5 dB of noise limits, with only one exception. Recorded noise breaches are as follows:

- Rehearsal noise breaches 1 x dB(A), 1 x dB(C);
- Event noise breaches 32 x dB(A), 23 x dB(C);
- Rehearsal noise breaches due to a new act 1 x dB(A), 1 x dB(C);
- Event noise breaches due to a new act 15 x dB(A), 12 x dB(C).

Noise breaches typically extended for a few seconds, on each occasion, a warning to the operators was issued and the sound system was adjusted accordingly. Noise monitoring was conducted at a total of five (5) sensitive receiver locations. Weather for the event was cloudy for the majority of the day with rain occurring from 18:40 to 20:14. Wind was blowing primarily from the north between 0 and 10 metres per second, with calm conditions during rain. The four stages were set up on Mission Fields and McKay 4, facing approximately north to north-east, which is the direction of residences furthest from the stages.

Jack Johnson 2005 (Single-Stage Concert) – Mission Fields, Centennial Park

Measured noise levels were generally below noise limits. Recorded noise breaches are as follows:

- Rehearsal noise breaches 1 x dB(A), 3 x dB(C);
- Event noise breaches 2 x dB(A), 8 x dB(C);
- Rehearsal noise breaches due to a new act 1 x dB(A), 2 x dB(C);
- Event noise breaches due to a new act 1 x dB(A), 5 x dB(C).

Noise was monitored at a total of five (5) sensitive receiver locations. For each breach, a warning to operators was issued and the sound system was adjusted accordingly. The weather was partly cloudy, with light showers between 14:30 and 16:30. The wind was blowing from the south-east between 5 and 12.5 metres per second. The stage was located at the southern end of Mission Fields and facing north-north-east, which is the direction of the furthest residences from the stages. It is worth noting that, with only two exceptions, noise levels were within 5dB of the limit. All breaches occurred at one of the monitoring locations: 10 Martin Rd, Centennial Park.

Good Vibrations 2006 (multi-stage festival) – Mission Fields, Centennial Park

Measured noise levels were generally below noise limits, with wind conditions contributing to the majority of recorded breaches. Recorded noise breaches are as follows:

- Rehearsal noise breaches 0 x dB(A), 0 x dB(C);
- Event noise breaches 5 x dB(A), 17 x dB(C);
- Rehearsal noise breaches due to a new act 0 x dB(A), 0 x dB(C);
- Event noise breaches due to a new act 1 x dB(A), 2 x dB(C).

For each breach, a warning to operators was issued and the sound system was adjusted accordingly. Noise monitoring was conducted at a total of five (5) sensitive receiver locations. The wind direction was from the north-east early in the day, tending towards a south-easterly in the afternoon and evening, and blowing around 7.5 metres per second. The five stages were set up facing north to north-east, which is the direction of the furthest residences from the stages. It is worth noting that all breaches, bar one, were within 5dB of limits.

Park Life 2006 (multi-stage festival) – Kippax Lake, Moore Park

Measured noise levels were generally below noise limits. Recorded noise breaches are as follows:

- Rehearsal noise breaches 0 x dB(A), 0 x dB(C);
- Event noise breaches 10 x dB(A), 5 x dB(C);
- Rehearsal noise breaches due to a new act 0 x dB(A), 0 x dB(C);
- Event noise breaches due to a new act 4 x dB(A), 2 x dB(C).

For each breach, a warning to operators was issued and the sound system was adjusted accordingly. Noise monitoring was conducted at a total of eleven (11) sensitive receiver locations. The wind was reported to be an easterly. Two of the stages were set up facing the south-west toward South Dowling St, whilst one stage was setup to face north-east toward the SFS.

Good Vibrations 2007 (multi-stage festival) – Parade Grounds, Centennial Park

Measured noise levels were typically below specified limits. Recorded noise breaches are as follows:

- Rehearsal noise breaches 0 x dB(A), 0 x dB(C);
- Event noise breaches 22 x dB(A), 22 x dB(C);
- Rehearsal noise breaches due to a new act 0 x dB(A), 0 x dB(C);
- Event noise breaches due to a new act 10 x dB(A), 9 x dB(C).

For each breach, a warning to operators was issued and the sound system was adjusted accordingly. Noise monitoring was conducted at a total of six (6) sensitive receiver locations. Wind was blowing from the north-north-east direction between 6 and 10 metres per second. The stages were configured with the two main stages facing south-west and the three smaller stages facing north-east, back towards the main stages.

V Festival 2007 (Multi-Stage Festival) – Parade Grounds, Moore Park

Measured noise levels were above noise limits on many occasions. Recorded noise breaches are as follows:

- Rehearsal noise breaches 2 x dB(A), 0 x dB(C);
- Event noise breaches 34 x dB(A), 38 x dB(C);
- Rehearsal noise breaches due to a new act 0 x dB(A), 0 x dB(C);
- Event noise breaches due to a new act 8 x dB(A), 10 x dB(C).

For each breach, a warning to operators was issued and the sound system was adjusted. Noise monitoring was conducted at a total of six (6) sensitive receiver locations. Wind was southerly at speeds between 7.5 and 12.5 metres per second. The stages were configured with the two main stages facing south-south-east and south-south-west and the single smaller stage facing north-east, back towards the main stages.

Park Life 2007 (multi-stage festival) – Kippax Lake, Moore Park

Measured noise levels were typically below specified limits. Recorded noise breaches are as follows:

- Rehearsal noise breaches 3 x dB(A), 3 x dB(C);
- Event noise breaches 0 x dB(A), 12 x dB(C);
- Rehearsal noise breaches due to a new act 0 x dB(A), 0 x dB(C);
- Event noise breaches due to a new act 0 x dB(A), 4 x dB(C);

For each breach, a warning to operators was issued and the sound system was adjusted accordingly. Noise monitoring was conducted at a total of nine (9) sensitive receiver locations. Wind was tending between westerly and southerly throughout the day, at speeds between 5 and 10 metres per second. The stages were configured with the two main stages facing west-south-west towards South Dowling Street and the two smaller stages facing north-east and south-east, towards the SCG and SFS. It is worth noting that all, bar three, exceedances are within 5dB of limits.

In summary, our review of the monitoring data shows that although measured noise levels frequently breach the specified noise limits; there is in some cases, a substantial contribution from the start of new acts and wind to the total number of breaches.

2.3 *REVIEW OF EXISTING AMBIENT AND BACKGROUND NOISE LEVELS*

ERM undertook long term noise monitoring as part of a previous study along Moore Park Road. This data is presented in *Annex B* and provides some indication of ambient and background noise levels, which is dominated by road traffic on Moore Park Road. This data was recorded following the opening of the Eastern Distributor and the resurfacing of Moore Park Road with open graded asphalt. The data is only considered to be representative of typical noise levels at residences fronting similar major roadways in the vicinity of the parklands.

As part of any noise assessment process, existing background and ambient noise levels are used to develop appropriate limits for a given operation or facility. It is important to consider the current level of existing noise levels at residences in the context of noise limits set for CPMPT.

Although long term noise monitoring has not been undertaken that is representative of all residences potentially affected by event noise emissions; historic compliance monitoring data that includes L_{90} background noise levels can provide representative levels for residences surrounding compliance noise monitoring locations.

The current daily Lmax levels for residents surrounding CP are highly dependent on their proximity to main roads. For example, residents along busy main roads such as Moore Park Road would experience higher Lmax levels than residents nestled in back streets.

From our observations of typical ambient daily Lmax levels and those during major music events shows:

- The LAmax noise levels are comparable, with recorded typical ambient (non-event) noise frequently higher than those from events; and

- Based on compliance monitoring data and as would be expected, low frequency sounds or LCmax noise levels are typically higher during major events. This tends to show that low frequency noise would be more noticeable than the higher frequency noise.

In order to supplement compliance monitoring data, it is recommended, as part of any significant development and modification of the NMP, long term noise monitoring be undertaken at various representative locations.

2.4 *REVIEW OF COMPLAINTS DATA HELD BY CPMPT*

Records of complaints held by the CPMPT in relation to concerts and festivals held within CPMPT grounds were reviewed by ERM.

Complaints regarding events can be made through a telephone hotline which is in operation at the times when noise is generated by the event including rehearsals, sound checks, event period and post event egress time. The hotline number is advertised through event notification letters circulated prior to individual events.

CPMPT complaints data was cross-referenced to complaints data set out in the acoustic monitoring reports compiled by independent acoustic consultants.

Complaints lodged on the DECC Environment Line related to events held at the two CPMPT-managed venues were also obtained from the. Complaints covering the period 2005 to the present were reviewed.

The intention of the complaints data review was to identify:

i) The nature of complaints and issues raised;

ii) The locations which generated complaints; and

iii) Any intersections between issues raised and complainant's location.

This assessment informed the development of the noise management, noise monitoring, complaints handling and review procedures which are included in this NMP.

2.5 *ANALYSIS OF COMPLAINTS DATA*

2.5.1 *Major Events*

CPMPT complaints data has been reviewed for the major events spanning 2005 to 2007.

Number and types of noise complaint

During the complaints assessment period, nine (9) major events took place, five (5) of which had available complaints data. The events are as follows:

- Good Vibrations, Music Festival, 2005, 2006 and 2007;
- Parklife, Music Festival, 2006 and 2007;

- V Festival, Music Festival, 2007;
- Jack Johnson, Concert, 2005;
- Missy Higgins, Concert, 2005; and
- Jamiroquai, Concert, 2005.

A total of two hundred and sixty one (261) complaints have been recorded during the assessment period. Of these 261 complaints, 57% (148) were generated in relation to events within the Parade Grounds (Centennial Park), 36% (94) were generated in relation to events within Kippax Lake (Moore Park) and 7% (19) were generated in relation to events within Mission Fields (Centennial Park).

A break down of complaints received in relation to events that took place from 2005-2007 is shown as follows in *Table 2.1*

Table 2.1 Complaints Recorded by CPMPT per Event, 2005-2007

Event	Event Date	Location	Number of Complaints
Park Life	29 - 30/09/06	Kippax Lake	36
Park Life	30/09/07 - 1/10/07	Kippax Lake	58
Good Vibrations	16 - 17/02/07	Parade Grounds	41
Good Vibrations	18 - 19/02/05	Mission Fields	19
V Festival	30 - 31/03/07	Parade Grounds	107
Total			261

The types and frequency of queries or complaints recorded on the CPMPT hotline were as summarised in *Table 2.2*

Table 2.2 Nature and Frequency of Complaints Recorded by CPMPT, 2005-2007

Nature of complaint	Number of times raised
General Noise Impact	187
Received no prior notification that event was taking place	16
Patron Behaviour (i.e. drunk, urinating in public)	15
Wildlife/Environmental Damage	9
Access to park or homes being restricted	7
Rubbish/Litter	6
Increase in Local Traffic	6
Intrusive Light	1
Nature of complaint not noted	14
Total	**261**

As shown in *Table 2.2* above, 71% (187) of the complaints were noise related.

The largest number of complaints (107) was recorded for the V Festival, which suffered an unusually high number of complaints. One reason for this was the adverse wind conditions noted at the time.

2.6 *SOCIAL RESEARCH & COMMUNITY CONSULTATION*

On commencement of the social research component of the study, we identified a study area derived from analysis of the complaints data available from the CPMPT, feedback from DECC and our understanding of noise impacts in similar sites. This study area is shown in *Figure 2.2*. This area has been used in selection of the sample for conduct of the telephone survey, recruitment of focus group participants, stakeholder interviews and distribution of the project newsletter. The study area had a total population of approximately 26,000 people (ABS 2006). This area captures all of the residences from which complaints were received with the exception of one complaint received from Kings Cross. It was felt that extension of the study area to include Kings Cross would not add significantly to the study results.

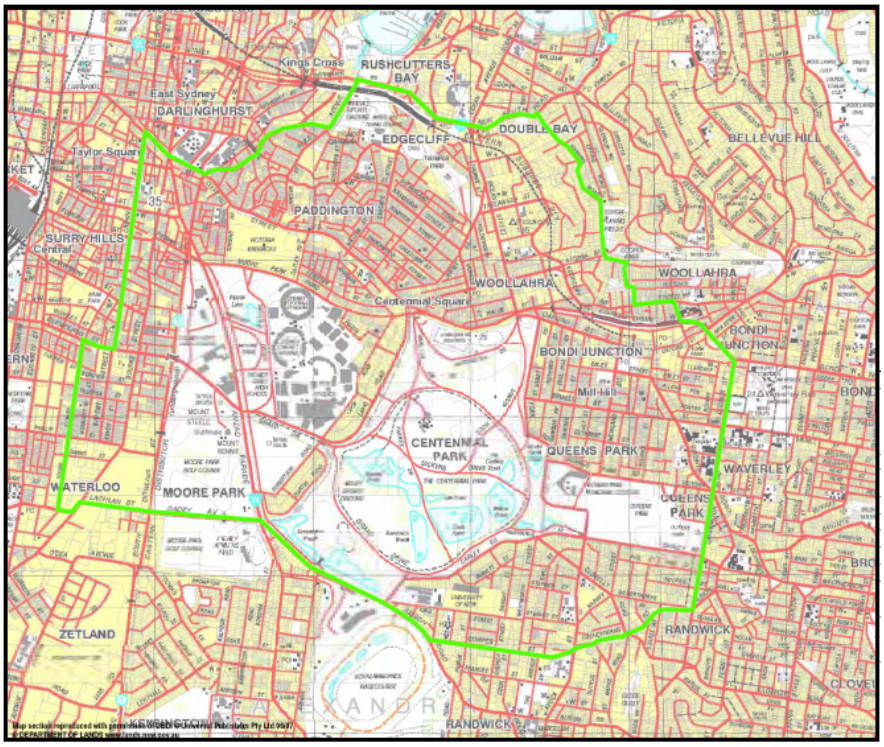

Figure 2.2 ***Map of Centennial Park Study Area***

The bulk of this research was conducted in late November 2007 through to mid December 2007, with three (3) stakeholder interviews being conducted in early January 2008 at the convenience of those stakeholders. The information provided through these activities has been considered in development of noise management strategies for this study.

The community information and consultation activities proposed include establishment of a 1800 telephone contact line, creation of a site specific email address on the CPMPT web site and a community information session. The contact line was established in December 2007 and the email address was activated in the first week of January 2008. These have continued to operate until late March 2008. The information received up to March 31st 2008 has been considered in finalisation of strategies for this NMP.

2.6.1 Study Survey

The survey questionnaire aimed to identify when people heard noise generated by the Park and what type of noise they heard. The questionnaire also included questions about people's use of the Parklands facilities. This questionnaire was designed to allow the CPMPT to replicate the survey research if required to evaluate the effectiveness of its noise management planning strategies over the next few years. A copy of the questionnaire is attached at *Annex C.*

The survey was conducted during the week of 10th December 2007 through to the 16th December 2007. A total of 120 people resident within the identified study area were interviewed by telephone. The results of the survey are discussed in *Section 6.*

2.6.2 Focus Groups

Two focus groups were conducted as part of the development of the NMP. Participants were recruited who were resident in areas within two streets of the Parklands, on the assumption that these residents were more likely to be affected by noise generated from the Parklands. In total, 29 people attended these groups. The final participant numbers were evenly distributed around the boundaries of the Parklands.

Each focus group was facilitated by a professional facilitator using a structured focus group guide. The groups provided an opportunity for in depth discussion of noise impacts effecting residents and identification of detailed issues of concern. The groups outlined the development of the NMP and provided an opportunity for participants to raise noise related issues. A copy of the Focus Group Guideline is at *Annex D.* The results are discussed in *Section 6*.

2.6.3 *Stakeholder Interviews*

A series of interviews with people who had expressed concern regarding noise on one or more occasions in the past 12 months to DECC and or the CPMPT were conducted. An interview guide was used to ensure consistency in the information gathered. A copy of the interview guide is at *Annex E*. Stakeholders were contacted by ERM and invited to participate in an interview by telephone or face to face. A total of eight (8) stakeholder interviews were conducted, with thirteen (13) people. Of these, five (5) were conducted by telephone, and three (3) face-to-face with an ERM consultant.

2.6.4 *Newsletter Distribution*

The study proposed production of two newsletters. The first was designed to introduce the study and the second to provide a summary of the results.

The first newsletter was distributed via letterbox drop to residents in the study area on the 5th – 6th January 2008. In total 26,000 copies of the newsletter were circulated. (It should be noted that newsletters could not be delivered to letterboxes which have notices asking that no unauthorised mail is delivered).

A second newsletter incorporating the findings of the study was circulated early in February 2008. This newsletter outlined the work of the study, its findings and invited people to visit the Information Session and Display planned in the last week of February 2008.

2.6.5 *Establishment Of Phone Line And Email Account*

A 1800 information number was established in December 2007 and an email contact attached to the CPMPT web site was activated in January 2008, coinciding with distribution of the first project newsletter. These were both in operation throughout January, February and March 2008. Information and comments received have been considered in preparation of the study report. All responses were logged on the NMP study database.

2.6.6 *Information Session And Display*

An Information Session and Display was held in the final week of February 2008. The display was located in the foyer of the CPMPT offices within the Park.

An information presentation was made by team members on the study on the 1st March 2008. The results of the study were discussed at the presentation.

2.6.7 *Interviews With Government Agencies*

The project team conducted interviews with DECC to discuss the parameters and approaches adopted in completing the study including interpretation on content for some of the items in the NMP. Interviews were also conducted with the three adjacent local government authorities: City of Sydney, Woollahra Council and Randwick Council.

3 VENUE INFRASTRUCTURE AND LAYOUT

3.1 VENUE LAYOUT

The three venues, Kippax Lake, Parade Grounds and Mission Fields have been used previously for major events. Mission Fields is no longer used for major events, ERM have assessed Kippax Lake and the Parade Grounds event layouts.

3.1.1 Kippax Lake

Kippax Lake is the venue for the Parklife music festival. The lake is bounded by Anzac Parade to the east; Moore Park Road to the north; Lang Road to the south; and Driver Avenue to the west. The SCG and the SFS are located directly west, whilst Moore Park continues to the east of Anzac Parade. The ground slopes gently up from the south to the north with elevations of RL 38 meters to RL 49 meters.

Stage configuration for Parklife has been through numerous iterations in the quest to reduce noise levels at residential receivers and improve the audio experience for festival attendees. The stage configuration used in 2007 is shown in *Figure 3.1.*

Parklife was divided into five (5) zones: Earth Zone, Water Zone, Kippax Zone, Fire Zone and Air Zone. With the exception of the Kippax Zone all zones feature amplified music. The Earth Zone's stage was located at the north-eastern end of Kippax Lake, facing south-west towards residence at the intersection of South Dowling and Cleveland Street. The Water Zones' stage was located on the east side of Kippax Lake, approximately 150 metres south of Moore Park Rd, facing west-south-west towards residence along to South Dowling Street. The Fire Zone's stage was located adjacent to Gregory Avenue on the western side of Kippax Lake, facing south-east towards the SCG and to residence on Cook Road. The Air Zone's stage was located at the southern end of Kippax Lake, facing north-east towards Victoria Barracks.

3.1.2 Parade Grounds/Brazilian Fields

The Parade Grounds and Brazilian Fields combined are the current venue for music festivals Good Vibrations and V Festival. The Parade Grounds/Brazilian Fields are bounded on all sides by parklands. It is separated from residence by approximately 200 metres to the east and west; approximately 700 metres to the south and approximately 400 metres to the north. The majority of the parklands are surrounded by residences, with the SCG and SFS (including the Entertainment Quarter etc.) to the north-west. Ground elevation of the Parade Grounds is typically RL 40 metres. The parklands slope up to the north-east and west, where the elevation reaches around RL 85 metres.

Both events have only been staged once at the Parade Grounds, in 2007. The stage configurations are shown in *Figure 3.2* and *3.3.*

Good Vibrations music festival featured five (5) amplified music stages consisting of the; Main stage, Roots stage, Laundry, B-Live and Star Bar. The Main stage and the Roots stage were located adjacent to Grand Drive in the Parade Grounds and were oriented to face south-east. The Laundry, B-Live and Star Bar stages were spread across the Brazilian Fields and were setup facing north north-east, east and east south-east respectively. This configuration has the two loudest stages (Main and Roots) facing toward the most distant receivers approximately at 1200 metres away.

V Festival music festival featured three (3) amplified music stages consisting of the; Red stage, Blue stage and Yellow stage. The Red and Blue stages were located adjacent to Grand Drive in the Parade Grounds and were oriented to face south south-west and south south-east respectively. The Yellow stage was located in the Brazilian Fields, facing north-east. Stage orientation was similar to Good Vibrations 2007.

Figure 3.1 Parklife Music Festival Stage Configuration – Kippax Lake

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Figure 3.2 Good Vibrations Music Festival Stage Configuration – Parade Grounds

A4

Figure 3.3 V Festival Music Festival Stage Configuration – Parade Grounds

A4

3.1.3 Description Of Permanent Sound Amplification Equipment

CPMPT do not have any permanent sound amplification equipment installed within the grounds. Temporary sound amplification equipment is installed for each event.

3.1.4 Types Of Activities Held At The Venues

Centennial Parklands is used for a wide variety of activities such as horse riding, bike riding, junior golf lessons, art classes, picnicking, dog walking etc. The majority of which, are relatively low noise activities that have minimal impact on surrounding residences.

The major events that have been held within CP grounds include:

- Good Vibrations - Music Festival held at Mission Fiels/Mckay 4 in February 2004, 2005 and 2006 and held at the Parade Grounds/Brazilian Fields in February 2007;
- Parklife - Music festival held at Kippax Lake annually in September/October;
- V Festival - Music festival held at the Parade Grounds for the first time in March 2007;
- Jack Johnson - Musical concert held at Missions fields in March 2005;

4.1.1 Residences

Residential properties are the primary group of sensitive receivers with respect to noise emanating from CPMPT managed venues. Limiting impacts at residences typically means other receiver types will also be protected. This is particularly so in this case, as residences are amongst the closest receiver types to the venues.

The CP venues are located in built-up residential areas, bounded to the north by Moore Park Road and Oxford Street; to the west by South Dowling Street; to the south by Allison and Darley Road and; to the east by York Road.

4.1.2 Other Sensitive Receivers

There are a number of other existing sensitive receivers in the notification area, including schools, childcare centres, hospitals and churches. Compared to residences, such land uses are less sensitive to noise given the generally transient nature of occupants. Further, internal noise amenity is typically more critical than outdoor amenity. The times of use is another factor, rendering most of these receiver types less prone to impact (e.g. night time concert noise will not impact schools, childcare and churches). The current notification area includes the following sensitive receivers:

Schools and Childcare Centres

- Paddington Primary School, Oxford St Paddington;
- St Francis of Assisi Catholic Primary School, 66 Gordon St Paddington;
- St Margret Mary Primary School, 58A Clovelly Rd Randwick;
- Emmanuel School, 20 Stanley St Randwick;
- Sydney Boys High School, Moore Park Surry Hills;
- Sydney Girls School, Anzac Parade Surry Hills; and
- CFK Childcare Centre, 61 Moore Park Road Moore Park.

Churches

- St Francis of Assissi Catholic Church, 66 Gordon Street Paddington;
- St Vladimir's Russian Orthodox Church, 31 Robertson Rd Centennial Park;
- Uniting Church-Eastside Parish, 2 Newcombe St Paddington; and
- Uniting Church, 7 Forth St Woollahra.

Hospitals

- St. Vincent's Public and Private Hospitals, Victoria St Darlinghurst;
- Bondi Junction Private Hospital, Spring St Bondi Junction;
- Surry Hills Day Hospital, 571 Crown St Surry Hills; and
- Roma Private Hospital, 9-11 William St Randwick.

5 NOISE PREDICTION AND ASSESSMENT PROCEDURE FOR PROPOSED EVENTS

5.1 HISTORIC BASELINE DATA

There is a considerable amount of measured noise data accumulated from several major events. Analysis of this data provides an indication of the types and level of noise that can be expected at residences from similar events. Noise levels at residences from future events can be assessed by comparison with historic events and corresponding data.

Figure 5.1 – 5.7 show the noise monitoring results for all available Category 3 events from 2005 to 2007. The figures are based upon the tabular results found in the acoustic monitoring reports for each event. The data presented here excludes exempted breaches caused by the start of a new act.

A summary of the data presented in Figure 5.1 - 5.7 is provided earlier in *Section 2.2*. General overall observations are that multi-stage events produce a higher quantity of noise limit breaches, breaches are exacerbated by adverse winds and by new bands taking to the stage.

For comparison purposes, measured event noise levels at residences were compared to noise limits set for neighbouring concert venues such as the SCG and the SFS. The concert noise limits for these venues are stipulated in their EPL as follows:

- For events at the SCG: 70dB(A) and 90dB(C)
- For events at the SFS: 80dB(A) and 100dB(C)

The findings can be summarised as follows:

- All measured noise levels associated with events at CP are below limits set for the SFS; and
- All measured noise levels associated with events at CP are mostly below limits set for the SCG.

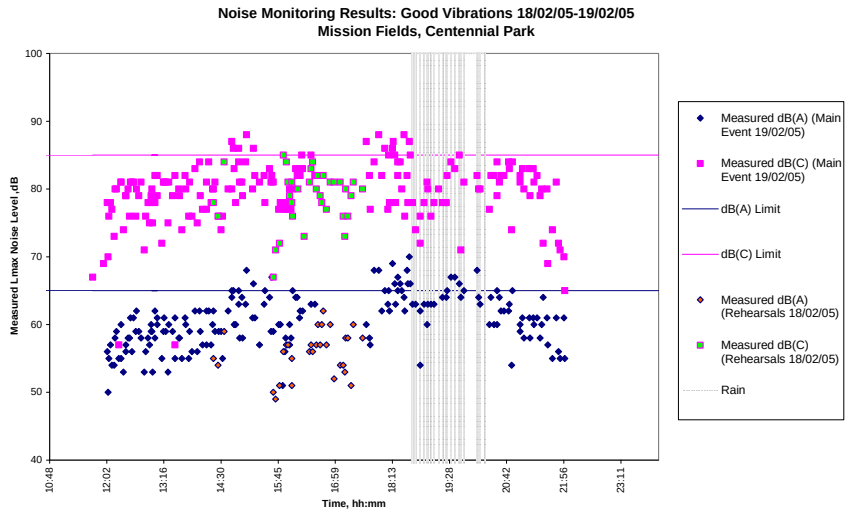

Figure 5.1 Good Vibrations 2005 (multi-stage festival) – Mission Fields, Centennial Park

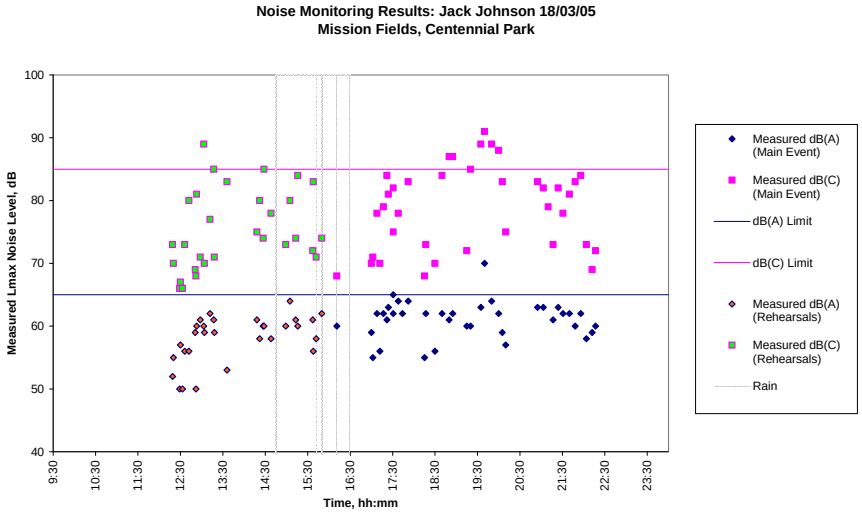

Figure 5.2 Jack Johnson 2005(single-stage concert) – Mission Fields, Centennial Park

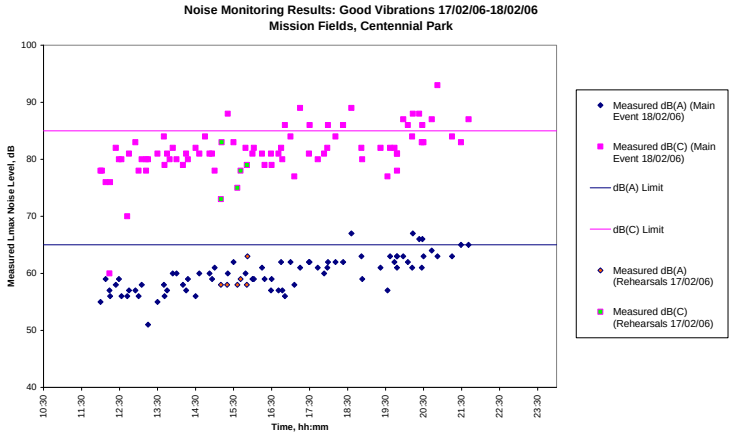

Figure 5.3 Good Vibrations 2006(multi-stage festival) – Mission Fields, Centennial Park

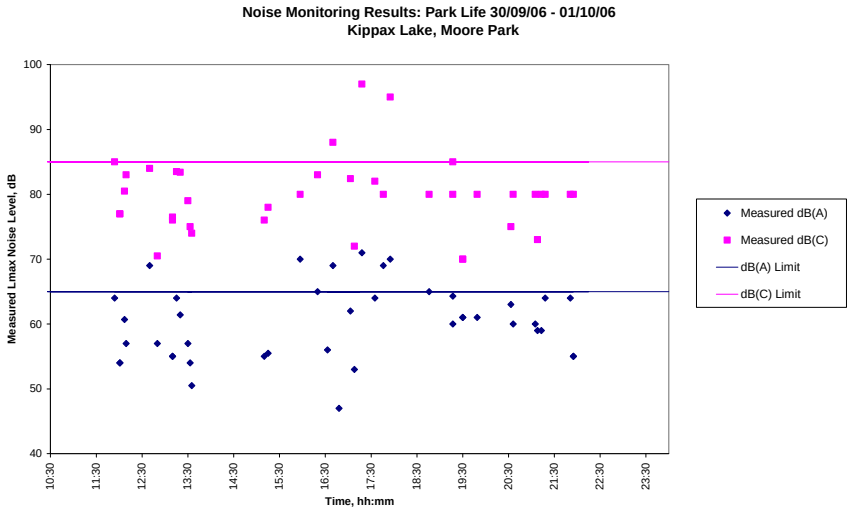

Figure 5.4 Park Life 2006 (multi-stage festival) – Kippax Lake, Moore Park

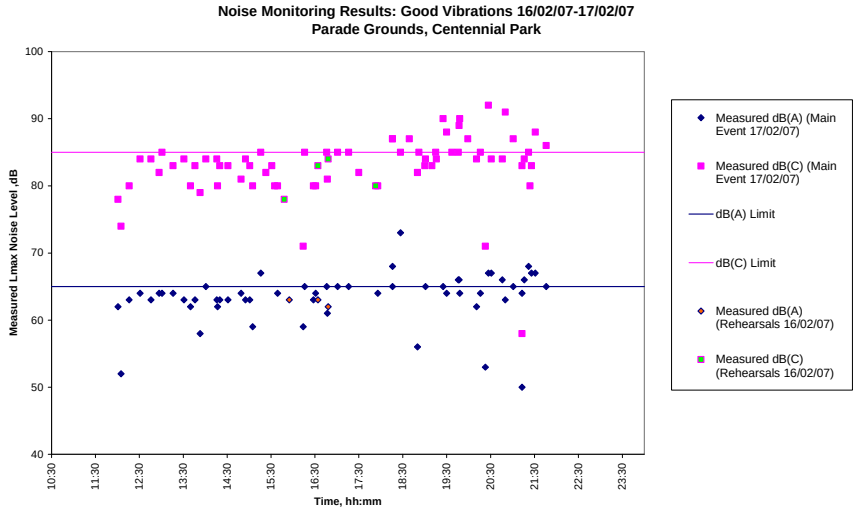

Figure 5.5 *Good Vibrations 2007(multi-stage festival) – Parade Grounds, Centennial Park*

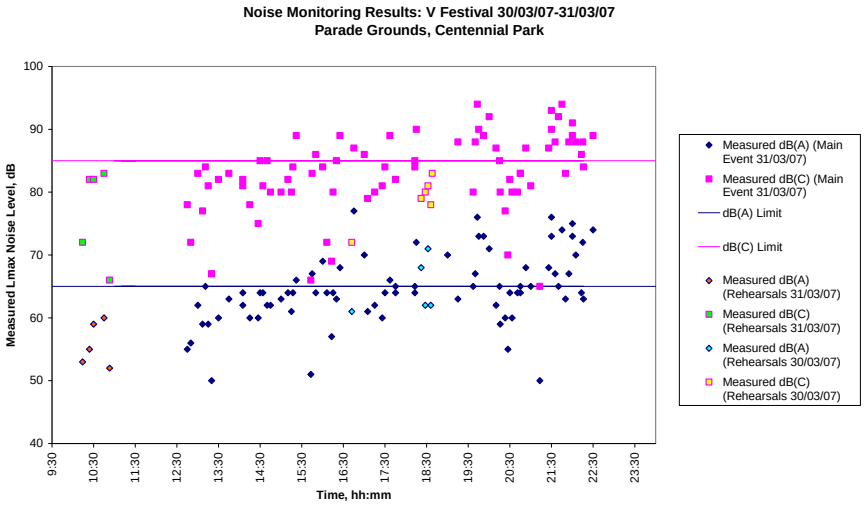

Figure 5.6 *V Festival 2007(multi-stage festival) – Parade Grounds, Centennial Park*

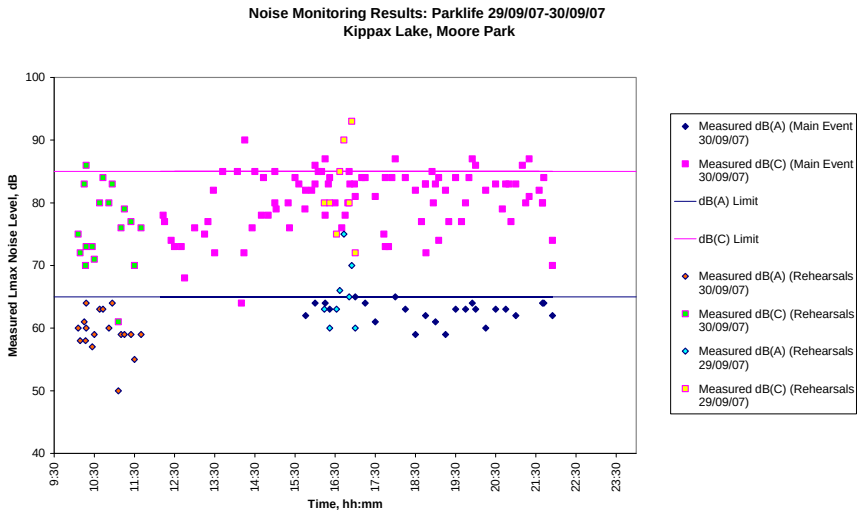

Figure 5.7 ***Park Life 2007(multi-stage festival) – Kippax Lake, Moore Park***

5.2 *NOISE MODELLING*

ENM noise modelling has been completed in order to better understand the geographical and meteorological implications on noise propagation.

Digital topographical data from the Department of Lands has been used as the basis for modelling Centennial Park and surrounding areas. The increasing slope leading up to the northern boundary of Centennial Park appears to shield residents directly to the north of Oxford Street from noise generated from the Parade Grounds. However, this shielding is nullified when there is a southerly wind. A small depression to the north of the park, in the Darlinghurst/Kings Cross area allows noise to propagate more freely, particularly during a southerly wind for events held at Kippax Lake.

Wind rose data (shown in *Annex F*) has been reviewed for prevailing wind conditions during the spring and summer periods, corresponding with the timing of major events. The wind roses show the prevailing winds are from north-easterly and southerly directions. The modelling scenarios reflect these two wind conditions, with three modelling scenarios: calm conditions; north-easterly wind at 3m/s; and southerly wind at 3m/s. Wind speeds above 3m/s have not been included in modelling consistent with current DECC policy.

The most recent stage configurations for Parklife (Kippax Lake) and the V-Festival (Parade Grounds/Brazilian Fields) have been used in modelling. Both modelled layouts are considered representative of the stage configurations used for each venue.

Sound power levels (SWL) for the sound amplification equipment has been calculated based on previous on-site sound level data. Although, due to the complexity of multi-staged sound amplification equipment, resultant noise contour data should be considered an approximation.

The following Figures 5.8 to 5.13, show the results for the six modelling scenarios.

The figures show that wind is a major determinant of received noise levels.

Different modelling scenarios were trialled using a smaller number of stages and also different stage orientations. The findings from these scenarios showed that the wind direction and speed was the overriding factor in determining which receivers were affected and to what degree. This correlates well with current monitoring results, particularly the V-Festival, which experienced higher than average exceedances under windy conditions.

Modelling also confirmed the validity of current stage configurations, particularly for the Parade Grounds, showing that noise dispersion is relatively well controlled. To that end, benefits of stage orientation are nullified during adverse wind conditions.

Octave band SWL's for each stage is shown in *Annex G*.

Figure 5.8 LAMax Noise Contour: Parade Grounds with Calm Conditions

A4

Figure 5.9 LAMax Noise Contour: Parade Grounds with 3m/s North Easterly Wind

A4

Figure 5.10 LAMax Noise Contour: Parade Grounds with 3m/s Southerly Wind

A4

Figure 5.11 LAMax Noise Contour: Kippax Lake with Calm Conditions

A4

Figure 5.12 LAMax Noise Contour: Kippax Lake with 3m/s North Easterly Winds

A4

Figure 5.13 LAMax Noise Contour: Kippax Lake with 3m/s Southerly Winds

A4

6 IDENTIFICATION OF NOISE MANAGEMENT ISSUES

Analysis of complaints data and the outcomes of the social research and community consultation highlighted the issues set out below. Proposed noise management strategies to address these issues are presented in *Section 8*.

6.1 OUTCOMES OF SOCIAL RESEARCH

Several important issues emerged as a result of detailed analysis of the results of the phone survey, focus groups and stakeholder interviews, several important issues emerged in terms of noise generated from Centennial Parklands. These activities showed a broad picture of the issues affecting the immediate and surrounding neighbourhood of the Park, as well as providing a more detailed understanding of resident perspectives in terms of noise. The results show that there are varying responses to noise and that there are polarised views on how the CPMPT should improve its approach to noise management.

The sections below outline results of the social research, as well as key noise related issues. Detailed summaries of the phone survey, focus groups and stakeholder interviews can be found in *Annexes H, I, J*. Proposed strategies in response to the analysis are discussed in *Section 7*, *Event Conditions*.

6.1.1 *Study Survey*

The study survey provided a clear picture of those areas most affected by noise and other impacts surrounding the Park. Since the survey area was based on the total area within which complaints had been received, it captured a significant population of around 26,000 residents. A large proportion of respondents reported hearing no noise from the Park. These respondents were in the main more then 500 meters from the Park. The majority of those respondents reporting that they did hear noise generated by the Park were geographically closer. Over two-thirds of these respondents associated this noise with large events such as Good Vibrations, V Festival and Park Life.

The total survey sample was 120 respondents. *Figure 6.1* shows the general locality in which respondents reported they were resident and whether they heard noise generated by events held in the Parklands. The majority of those that heard noise lived within close proximity to the areas where events are held. This correlates with the DECC complaints data, which the sample area of the social research was defined by.

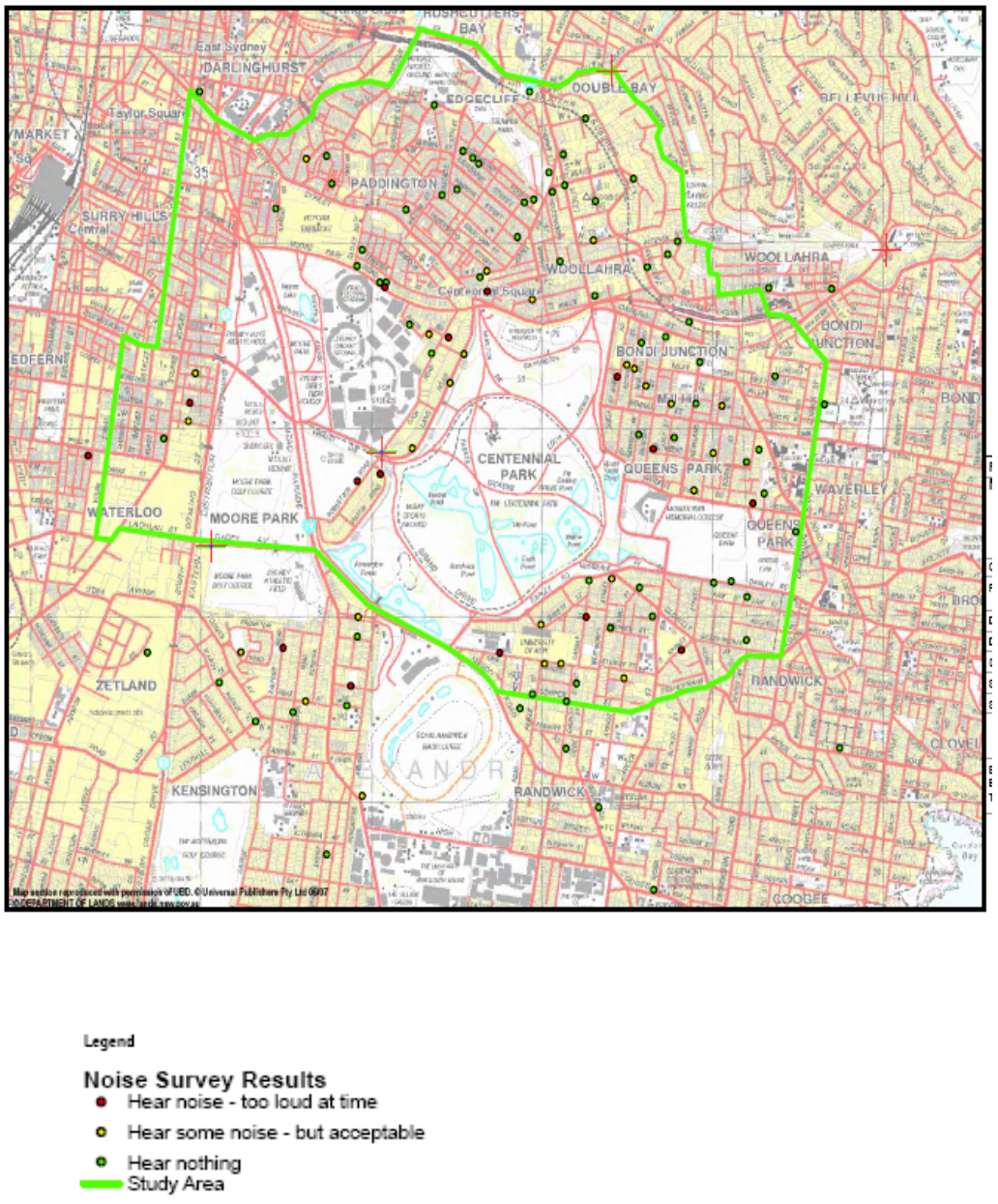

Figure 6.1 Map of Study Survey with results

Demographic Profile Of Respondents

The profile of respondents shows that the population in proximity to the Park are a relatively stable group with 69.7% having been resident in their current home for 5 years or more. They were also a relatively older group as shown by *Figure 6.2*, with more than one quarter (27.5%) being aged 65+.

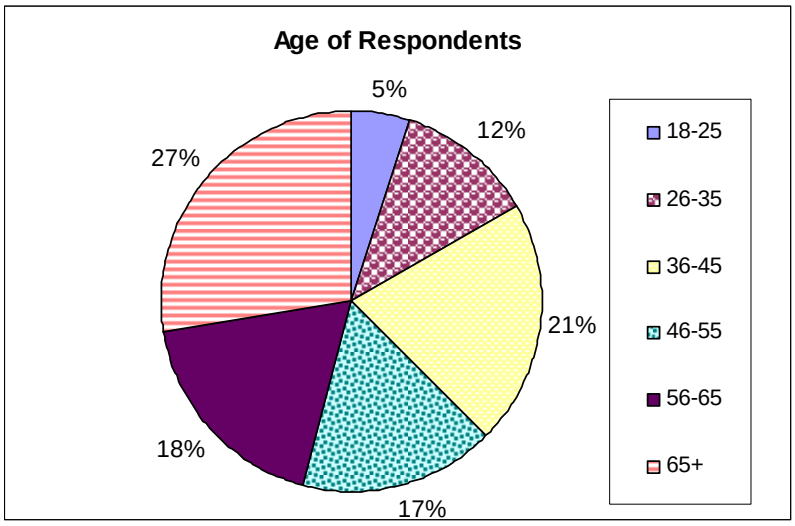

Figure 6.2 ***Age of Respondents***

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Times People Heard Noise

Of those respondents who did hear noise, the majority (90.5%) of them associated the noise with music from events (such as Good Vibrations, V Festival and Park life), and 23.8% identified crowd noise during events. A further 14.3% associated the noise with specific sounds, for example, "doof doof" sounds or bass noise, and 14.3% noise associated noise with people leaving and arriving at events.

The survey asked respondents what times of the day they heard noise. The majority reported that they heard noise between 4pm – 11pm (97.6%), followed by noise between 12 noon to 4pm (28.6%). This smaller proportion may be linked to the rehearsal and sound testing times for the three larger events held in the park.

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Communication With Residents

The study focus groups identified that communication between residents and the CPMPT was a key issue for those residents who reported hearing noise generated by events. The study survey attempted to identify the preferred strategy of communication. As shown below in *Figure 6.3*, no one method was identified as preferable to all respondents.

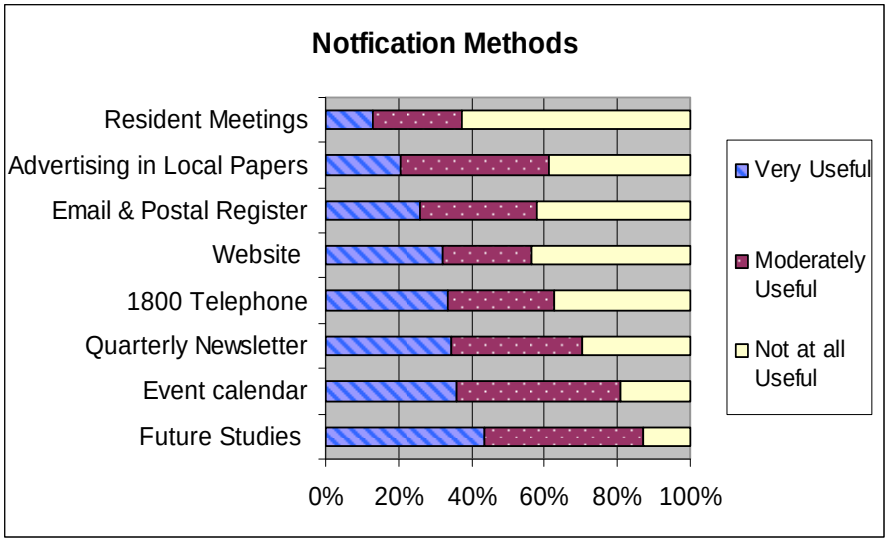


Figure 6.3 Notification Methods

The results show a polarisation of views about how useful any particular method might be. This may be a result of the demographic spread of residents in the area, and their differing perceptions and uses of internet and email, as well as phone and postal mail. For instance, the response on the usefulness of a Quarterly Newsletter was almost equally divided with 25.6% finding it not at all useful, and 30.8% finding it very useful. The opposing views may also be a result of problems reported with existing systems such as the complaints line as well as with distribution of fliers and newsletters. Currently, there are a number of different contact numbers for each event, as well as the CPMPT general complaints number. Many residents were unaware of the contact numbers, and those that were aware; felt they were not responded to. Residents reported that they also contact the Police, City of Sydney and Randwick Council, regarding issues to do with the Park. The CPMPT does not receive records of these complaints. Our interviews with surrounding Councils also indicate that the calls which are received are not formally recorded or forwarded to CPMPT.

The results suggest that the CPMPT needs to continue to provide information to its neighbours using a range of approaches and to build on these particularly with its closest neighbours. The slightly higher preference that the CPMPT undertakes telephone surveys or focus groups would seem to be based on a wider view which was also expressed in focus groups and interviews, that the CPMPT should take a proactive approach to communicate with its immediate residents.

The Parks Contribution To Resident Amenity

The greater majority of respondents reported that they did use the Parklands in some way whether for exercise or recreation.

It is clearly a significant part of daily and weekly life for local residents. Notably as shown in *Figure 6.4* below, a small proportion of respondents reported that they attended those events which generate high levels of noise in the Parklands.

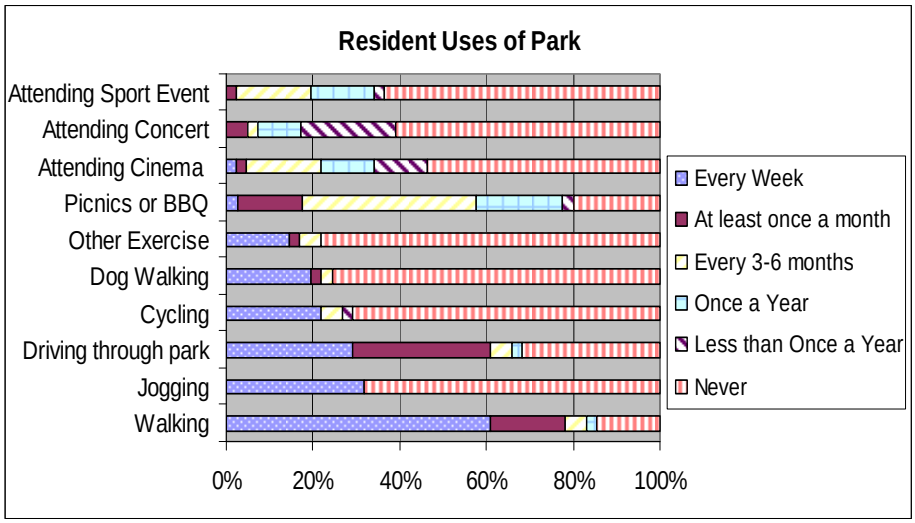


Figure 6.4 Residents Use of Centennial Parklands

Respondents were also asked whether overall the benefits of living near the Parklands outweigh the disadvantages. Of those who heard noise, 90% reported that currently the benefits still outweighed the disadvantages. We should be cautious in interpreting this result however since a proportion of these respondents also reported that at times the noise they heard was unacceptably loud. Again, the focus group results give us a more in depth insight into what people are doing and how much the noise generated does impact on residents.

Overall, the survey results show that noise generated from events held at the CPMPT primarily affects those people who live in its immediate proximity. Of this group, most are prepared to accept the current level of noise as a consequence of living where they do. The focus group results however, provide us with a more detailed picture of the issues of most concern to this group and are therefore important in terms of development of strategies to manage noise as part of this plan.

6.1.2 Focus Groups & Stakeholder Interviews

The focus group and stakeholder interviews sought to identify and discuss in detail key issues regarding noise impacts for residents who lived in close proximity to the Parklands, as well as those who had previously expressed concerns regarding the CPMPT. Both the groups and the interviews enabled detailed discussion about the nature of the issues of concern and the potential for improvement to current noise management approaches.

The key direct noise impact reported in focus groups and by stakeholders was the low frequency or bass noise generated from the three main events V Festival, Good Vibrations and Park Life. There were a small proportion of people who reported experiencing extreme disruption in their homes as a result of noise generated by the major events held in the Parklands. These people reported being unable to sleep, disruption to sleeping children and not only hearing but also being able to feel the bass generated during performances. For these people all noise generated by events was felt to be too high and intrusive.

More generally the noise associated with these three events was highlighted as an issue for residents and were the focus of complaints from those people who felt that noise generated by these events was excessive. This included noise levels during testing as well as the event itself. The repetition of testing noise which occurred in the preceding period was highlighted as an irritant particularly because it was repetitive, loud and seemed to be conducted over an extended period. That noise did not stop at the specified time advertised in information fliers was also a key issue. For example, there was general agreement by one focus group that noise disruption was much more bearable if there was a guarantee that the music would stop at the advertised time not 15 or 20 minutes later as was reported by several members of the group. In contrast, noise monitoring reports show that events run one or two minutes over agreed times. This indicates a difference in understanding but also clearly is an area of importance for residents.

Direct noise impacts were one of a number of concerns highlighted by the research. Of equal concern were the noise and disruption to the surrounding community associated with people leaving the major events. This included poor crowd behaviour, rubbish associated with events, traffic and parking difficulties for residents.

The majority of the interviewees and focus group participants although reporting being able to hear and feel the noise at times from major events, felt that this was part and parcel of living in proximity to the Parklands. Having said that, people particularly in the focus groups were concerned that any home should not be experiencing noise impacts to the level where this was so intrusive that it significantly interfered with resident's lifestyles.

The communication from the CPMPT and responses to complaints was often highlighted as an area of concern in focus groups and interviews. Focus group participants who had contacted the CPMPT reported that they had not received satisfactory responses to complaints, a view which was repeated by a number of stakeholders. Most people however were unsure of how to make a complaint to the CPMPT and were in general unaware of the existing complaint system. It is known that complaints are made to other organisations including the Police, City of Sydney and Randwick Council. However, there is currently no protocol for CPMPT to deal with these responses as they do not receive records of the complaints.

Improving communication with residents will need to include consideration of how these organisations, as well as the CPMPT manage complaints regarding events in the Park.

There was also limited knowledge about the activities which the CPMPT currently undertakes to manage noise. People were generally unclear about who was responsible for noise management and how the CPMPT was accountable for meeting noise limits.

The level of knowledge of the current consultation and information practices was also generally low contributing to a view that the CPMPT was not particularly concerned with the impact it has on its immediate neighbours. This lack of understanding seemed to be the basis for a significant proportion of people's frustration regarding noise impacts and related disruptions. Bearing in mind that focus groups and stakeholder interviews targeted people who were most affected by noise, this suggests the need for more active targeting of information and communication with these residents.

A detailed summary of the focus groups and stakeholder results can be found in *Annexes I & J*.

7 EVENT CONDITIONS

7.1 GENERAL EVENTS CONDITIONS

Conditions stipulated from *7.1.1* to *7.1.5* apply to for all events (Category 1 - Category 4).

7.1.1 Minimising Noise Impacts

Any sound amplification equipment used at any time at CP must be installed, maintained and operated in such a way as to minimise the noise impact on residential premises and other sensitive receivers.

7.1.2 Notification To Residents

Targeted communication of the Parks Complaint Management System – People were generally unaware of the current system. Those who had made complaints had the view that these had not been responded to appropriately. There may be a need to review the system simply ensuring that there is a greater awareness of the current system and actively reporting existing measures. Introducing a protocol to deal with the complaints made to other organisations is also of importance in order to ensure all enquiries are responded to. These reviews would be introduced in response to resident feedback and would improve people's perceptions about its adequacy and the willingness of the CPMPT to act on the concerns of its neighbours.

Improve communication with the immediate neighbour of the Park – The need to better communicate information about the activities of the Park which impact on the surrounding community was one of the key issues highlighted during the research. There was an expectation that the CPMPT had a responsibility to ensure people were aware in advance of activities to enable people to plan for them. This was particularly important for people who reported that they experienced high levels of noise and or traffic congestion as a result. As shown by our survey results the population resident around the Parklands is a diverse one in terms of how they received information which will make communication more complex. However good communication with residents is a key factor in assisting them to plan for and avoid the negative impacts of events being held in the Parklands. A strategy which provides general information to the wider resident population coupled with a more intensive and active communication strategy targeting immediate residents of the Parklands is recommended.

Review and Improve traffic management associated with events – Traffic and Parking were key issues. These have also been highlighted in a number of studies conducted by Sydney City and previously by South Sydney Council. The traffic associated with events held in the park was consistently raised as one of the key problems for residents. A number of people compared the approach taken by the CPMPT with that taken by organisers of other events noting that they felt there was room for improvement. It is therefore suggested that the CPMPT consider undertaking a review of its current approach and introduction of additional measures which may be identified. Again we also suggest that the CPMPT reports on the measures it currently takes to manage traffic and parking in relation to its main events to increase residents awareness of its activities regarding this issue.

Report on noise monitoring systems and activities– People were generally unaware of the existing measures which the CPMPT takes to minimise noise. Indeed a number of actions suggested in focus groups and stakeholder interviews such as noise monitoring, fines for operators and placement of speakers and stages are already part of the planning process. This lack of information contributes to the view that the CPMPT does not adequately consider its neighbours. Targeting information about these measures would raise awareness of how noise is managed and also reinforce the CPMPT's activities in managing noise associated with events.

Refer to *Annex M* Event Notification Procedure, which outlines actions to be undertaken.

7.1.3 Control Of Sound Amplification Equipment

The CPMPT must retain ultimate control of the level of sound caused by any amplification equipment during any events, including the sound test(s), rehearsal(s) and performances comprising events, cinematic screenings and theatrical productions.

7.1.4 Wind

Event noise limits apply for winds up to 3 metres per second (at a height of 10 metres) and temperature gradients up to 3 degrees Celsius per 100 metres.

7.1.5 Noise Monitoring Method

a) The monitoring point for measuring noise levels must be within one (1) metre of the boundary of any residential premises or sensitive receivers; and

b) Noise measurements will be taken using a Type 1 Sound Level Meter set to "fast" time response, 'A' and/or 'C' frequency weighting network as specified.

7.2 *CATEGORY 1 EVENTS*

7.2.1 *Noise Limits*

The A-weighted sound pressure level (LAeq.T) of noise from any amplification equipment used at CP must not exceed the ambient background Level (LA90.T).

Note: The LAeq.T is used instead of LA10.T inline with current NSW DECC noise policy (eg INP 2000).

7.2.2 *Noise Monitoring*

The CPMPT must conduct sufficient monitoring to ensure that:

i) the noise levels from these events comply with conditions stipulated in Section 7.2.1 above;

ii) the CPMPT has an understanding of the ambient background noise levels at external locations most affected by noise emanating from the CP on different days and at different times of the day; and

iii) the CPMPT has a working knowledge of what the noise levels are likely to be at the external locations most affected by noise emanating from the CP due to different types of events, and the use of different types of sound amplification equipment in different areas of the CP.

7.3 *CATEGORY 2 EVENTS*

7.3.1 *Noise And Time Limits*

The A-weighted sound pressure levels (LAeq.T) of noise emanating from sound amplification equipment must not exceed:

i) 5dB(A) above ambient background levels (LA90.T) between 1000 hours and 2300 hours;

ii) the ambient background levels (LA90.T) at all other times

Note: As much as is practicable, events must finish before 2000 hours if held on any day preceding a working day.

Note: The LAeq.T is used instead of LA10.T inline with current NSW DECC noise policy (eg INP 2000).

7.3.2 Noise Monitoring

The CPMPT must conduct sufficient monitoring to ensure that:

i) the noise levels from these events comply with conditions stipulated in 7.3.1 above;

ii) the CPMPT has an understanding of the ambient background noise levels at external locations most affected by noise emanating from the CP on different days and at different times of the day; and

iii) the CPMPT has a working knowledge of what the noise levels are likely to be at the external locations most affected by noise emanating from the CP due to different types of events, and the use of different types of sound amplification equipment in different areas of the CP.

7.4 CATEGORY 3 EVENTS

7.4.1 Number Of Events

Events may be held within the Centennial Parklands on a maximum total of eight (8) events in any calendar year. As of 2008, current major music festivals are Good Vibration, Parklife and V Festival. A series of events may be held over a maximum period of four (4) consecutive days.

Note: A music festival held over a series of consecutive days will be considered to be a series of one day events.

Note: This condition does not apply to events of national significance organised by the Federal or State Government. The decision as to whether an event is of national significance lies with the DECC.

7.4.2 Notification Of The DECC

At least twenty eight (28) days prior to the commencement date of the event(s), the CPMPT must inform the DECC's Manager, Sydney Local Government of:

i) the times and dates of any proposed event(s); and

ii) the name and contact details of a general liaison person for the purposes of communication with the DECC in connection with any event(s).

iii) the name and contact details of a person appointed as the CPMPT's representative specifically for the duration of any sound test(s), rehearsal(s) and events(s).

The DECC should be notified of any changes to these details at least seven (7) days prior to the commencement date(s) of the events.

At least seven (7) days prior to the commencement date of the event(s), the CPMPT must inform the DECC's Manager, Sydney Local Government of:

i) the times and dates of any proposed sound test(s) and rehearsal(s). Where any changes to such details occur within seven (7) days of the event, CPMPT must notify the DECC as soon as practicable.

7.4.3 DECC Access

DECC personnel must be granted unrestricted access to all areas, including the sound and mixing booth, of the grounds where the event(s) is to be staged.

7.4.4 Hours For Rehearsals, Sound Tests And Main Events

Rehearsals and /or Sound Tests

The total combined duration of event rehearsals and sound tests that are audible beyond Centennial Parklands must be kept to an absolute minimum, and must not exceed five (5) hours for each event. Rehearsals must not commence before 1000 hours or finish after 2200 hours. Sound test(s) associated with an event must take place on one day only and be conducted between 1000 hours and 2000 hours. This time is to be used to obtain a relationship between noise at the venue (eg mixing desk) and at residential locations.

Note: As far as is practicable, sound tests and rehearsals should finish before 2000 hours if held on a day preceding a working day.

Main Events

A main event must not commence prior to 1000 hours or finish after 2230 hours on any day. If the completion of an event is delayed by an occurrence which is beyond the control of the CPMPT, then the event may continue until 2300 hours.

7.4.5 Noise Limits

A-Weighted

During the test(s), rehearsal(s) and main event(s), the A-weighted maximum sound pressure level (LA,Max) measured in accordance with condition *7.1.5* and 7.3.2, must not exceed 65 dB(A).

Low frequency

During the test(s), rehearsal(s) and main event(s), the C-weighted maximum sound pressure level (LC,Max) measured in accordance with condition *7.1.5* and *7.3.2*, must not exceed 85 dB(C).

Measurement

As far as is practicable, the LA,Max and LC,Max must be measured:

i) in the absence of any influential sound, that is audibly distinguishable and extraneous to the sound from the amplification equipment; and

ii) with the sound level meter set to the "fast" time response, and the microphone placed between 1.5 and 1.6 metres above the ground.

Note: The LA,Max and LC,Max are the absolute maximum sound pressure levels They are not the LA,10 or LC,10.

Additionally the ambient noise levels should be documented and quantified, e.g. $L_{90,15min}$ and $L_{eq,15min}$.

7.4.6 Exemption For Exceedances At The Start Of A New Performance

An exceedence of the noise level limit in condition 7.4.5 by a maximum of 5 dB(A) and/or 5 dB(C) during a single five (5) minute period during the first fifteen (15) minutes of the performance of each new separate band or act will not be taken to be a breach of condition 7.4.5.

The exceedences permitted by this condition must be kept to an absolute minimum.

7.4.7 Noise Monitoring Points And Acoustical Consultant

Compliance or non-compliance with condition *7.4.5* must be monitored for the entire duration of the sound test(s), rehearsal(s) and event(s), by an accredited acoustical consultant.

Based on historic compliance monitoring, Centennial Park typically requires three (3) monitoring staff in the surrounding residential area to effectively monitor noise emissions from major music festivals, although smaller events such as concerts may only require one (1) or two (2) monitoring staff.

The monitoring points must be at the locations most affected by noise from the sound test(s), rehearsal(s) and events(s). This may include upper storey balconies where possible.

The locations most likely to be affected must be determined before the sound test(s), rehearsal(s) or main event(s) commence and then verified and adjusted as necessary.

Centennial Park Monitoring Locations

- From our observations during monitoring of three events in 2008, the four (4) monitoring locations that are generally representative of noise levels at potentially worst affected residences are as follows:
    - In the vicinity of 10 Martin Road;
    - In the vicinity of 90 Lang Road;
    - In the vicinity of 74 Lang Road; and
    - In the vicinity of the corner of York Road and York Place.
- Monitoring at additional locations is also advisable, and should be selected based on stage location(s) and meteorological conditions.
- Historic and additional example monitoring locations are also provided in *Figure 7.1*.

Example Moore Park Monitoring Locations

The four (4) monitoring locations that are generally representative of noise levels at potentially worst affected residences are as follows:

- In the vicinity of the corner of Phelps Street and South Dowling Street;
- In the vicinity of the corner of Nobbs Lane and South Dowling Street;
- In the vicinity of 16 Moore Park Road; and
- In the vicinity of 105 Greens Road.

Monitoring at additional locations is also advisable, and should be selected based on stage location(s) and meteorological conditions.

Historic and additional example monitoring locations are also provided in *Figure 7.2*.

As far as practicable, CPMPT must ensure that:

a) during the entire event, rehearsal or sound test, the CPMPT will ensure that sufficient staff are provided so that a CPMPT employee or agent is present at the mixing desk(s) of the main stage(s) and the CPMPT is able to exercise ultimate control of the noise levels from the sound amplification equipment during the event; and

b) during the entire event, the CPMPT employee(s) or agent(s) can contact and communicate with all of the acoustical consultants conducting the monitoring of the noise levels from the event.

Figure 7.1 Example Noise Monitoring Locations – Centennial Park

A4

Figure 7.2 Example Noise Monitoring Locations – Moore Park

A4

7.4.8 Reporting

Overall Objectives

The CPMPT will undertake a reporting program to stakeholders, including the DECC, local councils and local residents. The objectives of this reporting are to:

- Provide stakeholders with timely updates on the results of noise monitoring of events including any non-compliance with noise or time limits;
- Provide details of the incidence and duration of any noise exceedances during events including any action that was taken;
- Provide details of complaints received by the CPMPT relating to monitored events including any action that was taken; and
- In the longer term, provide information which will inform review of the effectiveness of the NMP.

Reports Provided to the DECC

Within two working days following the completion of the event the CPMPT must report to the DECC's Manager, Sydney Local Government by facsimile, phone or email:

i) compliance or non-compliance with condition 7.4.4, including the reasons for any breaches of the specified hours; and

ii) times and details of any occasions where exceedances of the noise level limits in condition *7.4.5* occurred which were not exempted by condition 7.4.6 and why the exceedence(s) occurred and what action was taken; and

Within twenty eight (28) days after the completion of an event or series of events, the CPMPT must submit to the DECC's Manager, Sydney Local Government a written report prepared by an accredited acoustical consultant. The report must contain the following:

1. the name address and telephone number of the person who prepared the report;
2. the relevant date(s) and the commencement and completion times of the test(s), rehearsal(s) and event(s) on each day;
3. a schedule of the actual start and finishing time of each new separate band or act;

4. the times and location(s), including a site plan, at which the noise measurements were taken and justification for selection of these locations;

5. details of the equipment and methods used to take measurements;

6. a statement of any time(s) at which the noise levels in condition *7.4.5* were exceeded and the level(s) and duration of any exceedence(s), including those permitted by condition 7.4.6;

7. a table(s) that clearly displays all noise measurements from the sound test(s), rehearsal(s) and event(s), including notation of the exceedances of condition 7.4.5 (including those permitted by 7.4.6), date, time, measurement location and any comments that were pertinent to the noise measurements;

8. a graph(s) that clearly display all noise measurements from sound test(s), rehearsal(s) and event(s), including graphical notation of the noise limits. Figures 5.1 to 5.7 from this NMP could be used as an example;

9. if any exceedances of conditions 7.4.5 or 7.4.6 occurred, a statement as to any measures which could have been undertaken to avoid those exceedances; and

10. any other information relevant to the consideration of the noise impact from the event on residents or other sensitive receivers.

The CPMPT must at the same time submit the following information:

A. the estimated total number of people that were anticipated to attend the event(s) on each day and the number who actually attended;

B. a summary of the number, location and times of any complaints received by the CPMPT;

C. if any exceedances occurred or any complaints were received, details of what the CPMPT intends to do (or do differently) for any future events; and

D. any other information relevant to the consideration of the noise impact from the event on residents or other sensitive receivers.

Reporting to the Community

In response to the results of the social research, a report should be made available to the public within five working days of the completion of each separate event. The CPMPT will publish on its website summary results of noise monitoring conducted by the acoustic consultant as described above in condition 7.4.8 (1-8). The summary report will set out:

i) Compliance or non-compliance with noise and time limits;

ii) The times and duration of any occasions where there were exceedances of the noise and time limits and;

iii) What measures were implemented to ensure that the exceedance(s) did not reoccur.

The report should summarise the noise monitoring results outlining in plain English the number of exceedances and the measures taken to manage these.

When available, the CPMPT will also publish on its website a full copy of the noise monitoring report for the event.

7.4.9 Review Of Noise Limits

Current noise limits specified in condition 7.4.5, including the exemption condition 7.4.6 will be reviewed annually, to ensure noise limits are reflecting the balance between community and event needs.

7.5 CATEGORY 4 EVENTS

7.5.1 Number Of Screenings And Performances

Category 4 events may be held during a maximum combined total of twenty six (26) weeks during any calendar year.

A maximum number of six (6) screening or performance days may be held per week. However, one additional "charity" screening or performance may be held on the seventh day once during any twelve (12) week period.

7.5.2 Hours

Screenings and performances must not commence prior to 1000 hours or finish after 2300 hours on days preceding working days. If the completion of a screening or performance is delayed by an occurrence which is beyond the control of the CPMPT, then the screening may continue for an extra thirty (30) minutes.

Sound tests audible beyond the boundary of Centennial Parklands may be conducted for a total duration of one (1) hour per day for each screening or performance day and they must be conducted between 1000 and 2130 hours only. The late nature of the sound test window is to facilitate concurrent screen projection tests and sound test during daylight savings.

The maximum total duration of rehearsals with the use of sound amplification equipment audible beyond the boundary of Centennial Parklands must not exceed three (3) hours per week.

7.5.3 Noise Level Limits

During any cinematic screenings and the associated sound test(s) and during any theatrical performances and the associated sound test(s) and rehearsal(s), the A-weighted maximum sound pressure level LAmax measured in accordance with condition 7.1.5, must not exceed the following levels at the corresponding locations:

- 55dB(A) at the corner of York Street and York Place;
- 48dB(A) at the corner of St James Road and York Place;
- 48dB(A) at the corner of St James Road and Gowrie Street; or
- 51dB(A) on York Street, at any point between Birrell Street and York Place.

As far as is practicable, the LAmax must be measured:-

i) In the absence of any influential sound, that is audibly distinguishable and extraneous to the sound from the amplification equipment.

ii) With the sound level meter set to "fast" time response and the microphone placed between 1.5 and 1.6 metres above the ground.

Note: The LAmax is the absolute maximum sound pressure level that must never be exceeded at any time. It is not the LA,10.

7.5.4 Monitoring

The first sound test and screening of each season of screenings must be monitored by an accredited acoustical consultant to ensure compliance with condition 7.5.3.

The CPMPT must conduct sufficient monitoring of the noise levels from cinematic screenings/theatrical performances and the associated sound test(s) and rehearsal(s) to ensure compliance with 7.5.3.

7.5.5 Reporting

On the next working day following the first screening of a season of screenings, the CPMPT must report to the DECC by facsimile or email:

i) compliance or non compliance with condition 7.5.3 during the first sound test and screening including the reasons for any breaches of the specified hours; and

ii) times and details of any occasions where exceedences of the noise level limits in condition 7.5.3 occurred, why the exceedences occurred and what action was taken; and

iii) what the CPMPT intends to do to ensure the specified hours and noise level limits are complied with in the future.

Note: Depending upon this report and the number and nature of any complaints received during the season, the DECC may require additional monitoring to be conducted.

8 ADDITIONAL NOISE MANAGEMENT STRATEGIES

8.1 EARLY WARNING NOISE MONITORING

A common form of noise mitigation during previous events has been the issuing of warnings to the CPMPT and Front of House (FOH) or sound operators at events. This has been done when measured noise levels at residences is at or above limits. On many occasions this has demonstrated to be effective in controlling subsequent noise levels.

It is therefore proposed to improve such warnings from being re-active post breaches of limits to pro-active warnings prior to breaches. This means that warnings will be triggered when measured venue noise levels are not more than 3dB of limits. This will result in better noise management, reduce the potential for breaches and result in lower noise levels at residences. The 3dB has been chosen on the basis of being slightly above the threshold of human perceptibility and also equates to half of the sound energy.

8.2 ON-SITE ANEMOMETER

A device capable of recording wind speed and direction at 10 minute increments will be installed on site during major events. Data from such a device will be accessible before, during and after an event. This will be used to better understand the influence of wind on sound propagation and hence pre-empt enhancement of noise. The benefits yielded from such data will include, amongst other things, informing of noise monitoring locations such that the worst affected residences are captured. This will result in better management of noise emissions during major events.

8.3 SOUND AMPLIFICATION EQUIPMENT

Audio hire companies providing audio equipment for an event within CP will observe the following guidelines:

a) Any sound amplification equipment used at any time on CPMPT lands will be installed in such a way as to minimise the noise impact on residential premises or sensitive receivers.

b) The sound amplification equipment will be maintained in a proper and efficient condition so as to minimise the noise impact on residential premises or sensitive receivers.

c) The sound amplification equipment will be operated in a proper and efficient manner so as to minimise the noise impact on residential premises or sensitive receivers.

8.4 EVENT NOISE PREDICTIVE PROCEDURE

The following procedure will be adopted by the contracted acoustic consultant for Category 3 Events to better understand potential noise levels from proposed major events:

1. Identify all major noise sources at the venue;

2. Identify the location of noise sources, including relative height above ground;

3. Identify the location of receiver areas;

4. Check weather condition forecasts, particularly wind speed and direction and the potential presence of temperature inversions on the day of the event;

5. Quantify the expected crowd attendance;

6. Compare audio engineers proposed design of stage audio set up with previous configurations;

7. Use rehearsals and sound checks (during the daytime) to inform the event operators at what (near-field) volume settings residential criteria are met. That is, residential noise monitoring during the day will be used to quantify the (near-field) volume settings so that all parties, acoustic engineers undertaking residential monitoring and audio engineers, are equipped with data prior to the main event at night. Typical data that will be reported includes LAmax, LCmax noise levels at residences and at the mixing desk (via attended or unattended monitoring), weather conditions (e.g. wind speed and direction) and other standard details as described in *Section 7*; and

8. Install a noise monitor (attended or unattended) at the mixing desk(s) of the main stage(s) for the duration of all the performances. This data will be used to build on the existing information and improve the predictive accuracy of this procedure over time.

9. Mandatory Pre-Event Sound Checks

Where rehearsals and sound checks are proposed as part of the event (typically during the daytime prior the event) these will be used to inform the acoustical consultants at what (near-field) volume settings residential criteria are met. That is, residential noise monitoring during the day will be used to quantify the volume settings so that all parties, acoustic engineers, CPMPT staff and audio engineers are equipped with data prior to the main event.

Where such rehearsals and sound checks are not proposed, a mandatory minimum 1-hour sound check will be imposed to test the system as described above (i.e. during daytime hours prior to an event).

Typical data that will be reported includes LAmax, LCmax noise levels at residences and at the mixing desk (via attended or unattended monitoring), weather conditions (e.g. wind speed and direction) and other standard details as described in condition 7.4.7 and 7.4.8.

8.5 EVENT RECYCLING PROGRAMS

Community consultation has identified some issues concerning cleaning related noise after major events and the excessive amounts of rubbish generated by major events. Historically, recycling programs have used public bins that have been labelled for general waste and recycling. This method can be improved to increase capture rate for recyclables, particularly towards the end of an event. The adoption of a new recycling program was included in one major event held in the past year which :

- significantly reduced the amount of waste needed to be cleaned by cleaning staff after the festival;
- captured a majority of all recyclables; and
- minimised recyclable waste going into landfills.

Incorporation of this system into other events held will be investigated in the coming year.

8.6 TIMES OF CLEAN UPS

The event recycling program outlined above has the ability to significantly reducing the amount of waste to be cleaned after an event. In light of this, event cleaning may be undertaken directly after an event, in order to have the park ready for general use the following morning.

8.7 POLICE PRESENCE BEFORE AND AFTER EVENTS

The CPMPT will engage the NSW Police both before and after events for crowd control and minimisation of anti-social behaviour.

8.8 CP STAFF TRAINING

The CP staff attending events and positioned at major event mixing desks will be trained on the content and detail of this NMP.

8.9 MONETARY DEPOSIT BOND

A deposit bond will be held by the CPMPT and used to penalise major events operators where noise breaches have occurred at the discretion of the CPMPT.

8.10 COMMUNICATION WITH IMMEDIATE NEIGHBOURS OF THE CPMPT

The study identified clearly that residents in the immediate vicinity of the CPMPT are those most affected by events. As such they constitute an easily defined stakeholder group that merits special attention from CPMPT in management of its events. We suggest that CPMPT establishes a communication strategy which targets this group as part of its management of impacts associated with events. This could include a number of components but at a minimum we recommend:

- Establishment of an Immediate Resident email register; this would provide information to immediate residents of CPMPT about events.
- Production of a Tri-annual newsletter or flier which provides information about CPMPT activities, information lines, noise monitoring results, complaints management systems.
- Bi annually invitation to CPMPT neighbours "gathering" in the Parklands. In the main people reported that public meeting or forums did not provide an opportunity for them to discuss issues of concern. A less formal opportunity was suggested such as a social gathering where members of CPMPT and its neighbours could meet and discuss issues, exchange information and make suggestions.

8.11 MONITORING COMMUNITY SATISFACTION AND UNDERSTANDING

The survey results from this study provide an overview of the views of residents in the wider vicinity of the Parklands about noise impacts.

It has been useful in identification of issues associated with noise but also generally issues regarding the impact of the CPMPT on its surrounding community. Continued monitoring of the level of satisfaction and understanding of residents within this community will enable CPMPT to evaluate the effectiveness of the strategies which are adopted to management noise. We recommend that CPMPT develop a formal system to monitor resident views and identify impact. This could include:

- Conduct of a survey of residents in the study area identified in the report. A survey would provide objective data on current views and issues and overtime measure the effectiveness of mitigation strategies adopted.

- Conduct of more regular focus group research say bi annually. Again, focus group research would provide a longitudinal view of community views on noise impacts allowing the CPMPT to gage the impact of measures taken to manage noise. Most importantly however this style of research allows CPMPT to engage with a cross section of the general community as apposed to a particular interest group ensuring that they have a representative view of the priorities and issues of concern to there neighbours.

8.12 COMPLAINTS MANAGEMENT

The confusion around how complaints are managed by CPMPT and the role of other authorities but particularly the City of Sydney has been identified as a key source of angst for residents in the area surrounding the Parklands. Addressing this issue is an important part of addressing the concerns identified in relation to noise impacts. This is not an issue which can be addressed using one tool or approach. It will require discussion between the various bodies involved, education and information of stakeholders as well as potentially review of some of the current practices. Ideally the CPMPT needs to undertake a through review of complaints handling to ensure that it can develop effective strategies to manage this issue.

At a minimum we recommend:

- Establishment of a 1800 number to record complaints covering the periods including sound testing, event, and post event periods. At a minimum the 1800 number should be staffed during business hours but critically it must be staffed during and immediately following each event. This would ensure that where required immediate action can be taken with regard to a complaint.

- Formal written response to all calls logged from one day prior to one day post each event should be undertaken within 48hours following the event.

- Reporting of complaints management systems and complaint summaries included in quarterly news flier targeting immediate residents of CPMPT.

8.13 SPREAD OF EVENTS THROUGHOUT THE YEAR

In general terms, events are staged at CP during the spring and summer period. The CPMPT work with other stakeholders on the Moore Park Event Operations Group to seek to coordinate major events in as practical a manner as is possible.

8.14 CHOICE OF VENUE

Through an examination of noise monitoring data in combination with noise modelling, the Brazilian Fields and Parade Grounds seem better suited for major music events. Given this finding, and as much as is practicable, the CPMPT will aim to maximise the use of these areas as an event venue, in preference to Kippax Lake for example.

9 NMP REVIEW AND IMPLEMENTATION STRATEGY

The NMP commenced in 2007. Preliminary results were available to CPMPT in early January 2008. The CPMPT has used these results to introduce a number of strategies aimed at improving noise management of events held in 2008. Comparison of complaints data from three (3) main events in 2008 indicates that these measures have been successful in mitigation of a number of the impacts associated with large events held to date. The NMP therefore identifies those measures which have been implemented prior to 30 April 2008 and which will be continued as well as a number of strategies which will be implemented in the next few years.

9.1 APPROACH TO IMPLEMENTATION

The CPMPT has implemented the following strategies designed to minimise noise generated by events held. These will form part of the overall management strategy for CPMPT in future.

The CPMPT has to implement the following tasks related to this NMP, in the timeline outlined below in *Table 9.1.*

Table 9.1 Implementation Timeline

Task	Date Commenced
Implementation of proposed event noise predictive procedure	February 2008
Implementation of improved early warning system for noise monitoring of events	February 2008
Implementation of system for mandatory pre concert sound checks	February 2008
Implementation of CP staff training program	February 2008
Implementation of major music event monetary deposit bond	February 2008

9.2 EVENT NOTIFICATION PROCEDURE

The NMP identified a number of strategies which the CPMPT will implement within the next 12 months. These will form part of the ongoing NMP for the CPMPT. These strategies are outlined in *Table 9.2* – NMP Strategies to be implemented by 1 January 2009. A table outlining Event Notification Procedures is found at *Annex M.* .

Table 9.2 Implementation Timeline

Task	Timeline
Review and implementation of complaints handling mechanism. (This would include liaison with the three councils)	From June 2008
Implementation of proposed notification boundary	From June 2008
Implementation of the proposed use of exit gates following events	From June 2008
Installation of on-site anemometer	By January 2009
Implementation of choice of venue, where practicable	From June 2008
Implementation of DECC reporting mechanism. (See Annex M)	From June 2008
Annual review of NMP – CPMPT will conduct an annual review of the strategies used in mitigation of noise generated in the Park. The results of this review and the implementation of additional strategies will be reported to DECC and will be available on the CPMPT web site.	Annually from January 2009 – will occur annually at the end of events season in May
Tri Annual community newsletter – The newsletter will report on the effectiveness of Noise Management Strategies and summarise complaints and general feedback received from neighbours of the park as well as the wider community.	Tri annually from May 2008
Inclusion of survey questions regarding noise impacts in the annual CPMPT survey – The results will provide the park with a longitudinal measure of the effectiveness of its noise management strategies.	From June 2008
Annual focus group research – The Park will hold a minimum of 2 Focus Groups each year– The focus groups will provide the CPMPT with a longitudinal measure of the effectiveness of its noise management strategies	From June 2008
Attendance by representatives of CPMPT at local Community forums and meetings	From June 2008

9.3 COMPONENTS OF THE ANNUAL NMP REVIEW:

- Assessment of compliance with noise and time limits through analysis of acoustic consultant noise monitoring reports;
- Review of complaints data received by the CPMPT, DECC or Council(s) for all events; and
- Assessment of the outcomes of annual reporting to and consultation with the community.

The annual review will incorporate a "corrective action loop" framework. This will ensure that the noise management strategies as set out in Section 8 are reviewed and amended as required.

The diagram below shows the corrective action loop, which will be the responsibility of the Manager of venue Services, CPMPT and will be overseen by the CPMPT Board.

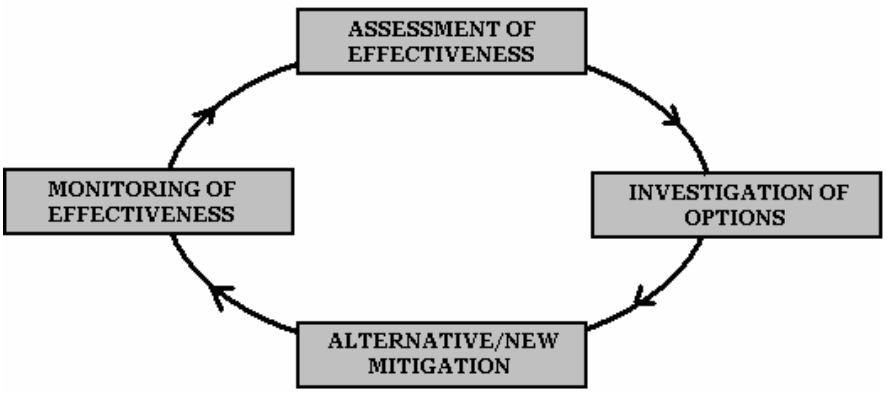


Figure 9.1 Corrective Action Loop for NMP Review

9.4 REPORTING ON ANNUAL NMP REVIEW

A summary report of the NMP Review and any amendments to the NMP will be published on the CPMPT website.

Annex A

Glossary Of Terms

Table A.1 Glossary of Terms

Term	Description
ABL	Assessment Background Level (ABL) is defined in the INP as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L_{90} statistical noise levels.
dB(A)	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(LinPeak)	The peak sound pressure level (not RMS) expressed as decibels with no frequency weighting.
L_1	The noise level exceeded for 1% of a measurement period.
L_{10}	A noise level which is exceeded 10% of the time. It is approximately equivalent to the average of maximum noise levels.
L_{90}	Commonly referred to as the background noise, this is the level exceeded 90% of the time.
L_{eq}	The summation of noise over a selected period of time. It is the energy average noise from a source, and is the equivalent continuous sound pressure level over a given period.
L_{max}	The maximum root mean squared (RMS) sound pressure level received at the microphone during a measuring interval.
RBL	The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the intrusiveness criteria for noise assessment purposes and is the median of the ABL's.
RMS	Root Mean Square which is a measure of the mean displacement (velocity or acceleration) of a vibrating particle.
Sound power level	This is a measure of the total power radiated by a source. The sound power of a source is a fundamental location of the source and is independent of the surrounding environment.
Temperature inversion	A positive temperature gradient. A meteorological condition where atmospheric temperature increases with altitude to some height.

Annex B

Typical Ambient Noise Levels

Table B.1 Typical Ambient Noise levels: 1st Floor 374 Moore Park Rd

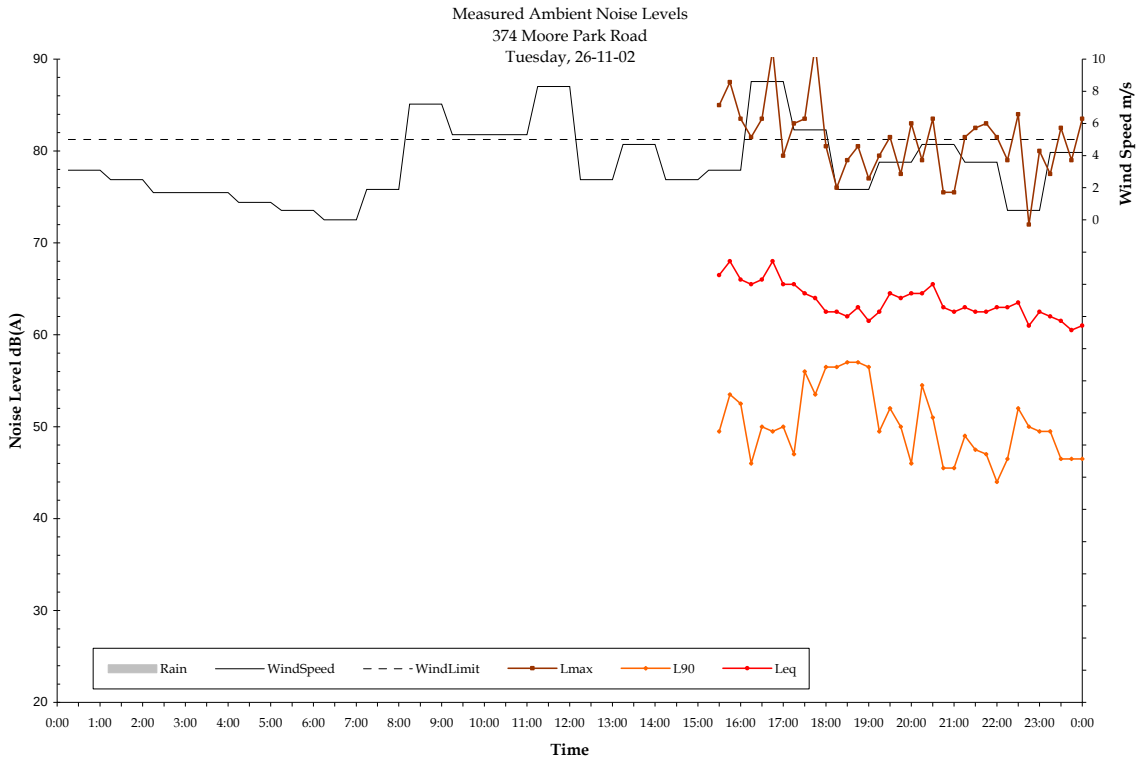
Date	ABL Day	ABL Evening	ABL Night	Leq 11hr Day	Leq 4hr Evening	Leq 9hr Night
Tuesday, 26-11-02	0.0	45.5	38.5	0.0	63.3	60.4
Wednesday, 27-11-02	51.5	46.0	37.5	69.0	63.9	60.8
Thursday, 28-11-02	50.0	43.0	32.0	68.2	62.9	60.9
Friday, 29-11-02	48.5	50.0	43.5	69.3	66.1	62.6
Saturday, 30-11-02	48.0	46.5	45.0	64.6	68.8	61.4
Sunday, 01-12-02	49.0	44.5	36.5	64.8	64.0	59.9
Monday, 02-12-02	49.0	43.5	37.5	67.2	63.7	59.9
Tuesday, 03-12-02	48.5	44.5	37.5	68.1	64.9	60.7
Wednesday, 04-12-02	50.0	47.0	40.5	67.7	64.6	61.4
Thursday, 05-12-02	50.5	48.5	44.0	68.3	65.4	62.0
Friday, 06-12-02	51.5	47.5	41.0	68.2	65.5	62.1
Saturday, 07-12-02	49.0	42.5	36.0	66.1	63.6	60.0
Sunday, 08-12-02	44.5	46.5	38.5	63.9	63.8	59.5
Monday, 09-12-02	49.5	46.5	37.0	70.1	63.5	62.4
Tuesday, 10-12-02	55.5	55.0	43.5	69.9	68.7	63.9
Wednesday, 11-12-02	0.0	0.0	0.0	0.0	0.0	0.0
Summary Values						
RBL	**49.3**	**46.5**	**38.5**			
Average Leq				**67.9**	**65.3**	**61.4**

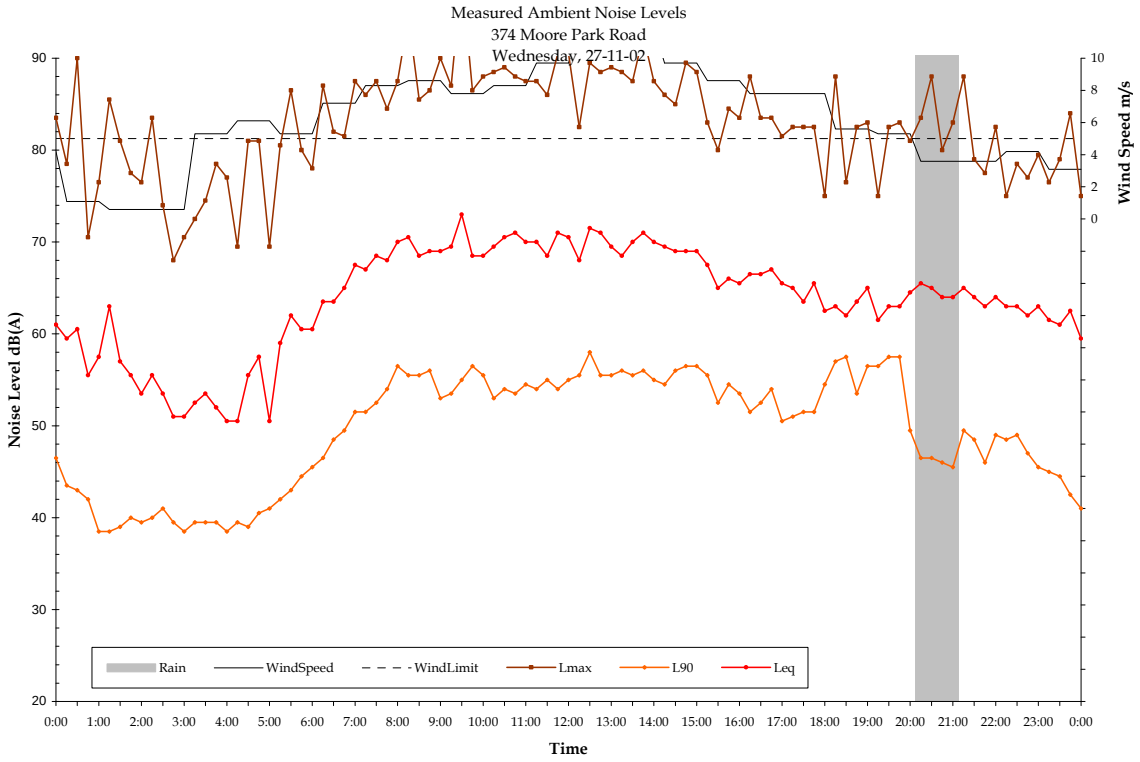
Table B.2 Typical Ambient Noise Levels: 390 Moore Park Rd

	ABL Day	ABL Evening	ABL Night	Leq 11hr Day	Leq 4hr Evening	Leq 9hr Night
Tuesday, 26-11-02	0.0	44.0	37.0	0.0	61.9	58.7
Wednesday, 27-11-02	49.5	43.5	35.5	67.6	62.2	59.3
Thursday, 28-11-02	47.0	42.0	29.5	66.6	62.1	59.1
Friday, 29-11-02	45.5	48.5	42.0	67.3	64.3	60.5
Saturday, 30-11-02	45.5	45.0	43.0	62.5	66.4	59.4
Sunday, 01-12-02	47.0	43.0	34.5	62.9	62.4	58.4
Monday, 02-12-02	46.5	41.5	35.5	65.3	62.6	58.3
Tuesday, 03-12-02	46.0	42.0	35.5	65.9	68.4	58.4
Wednesday, 04-12-02	48.0	46.0	39.0	65.5	63.2	58.9
Thursday, 05-12-02	48.0	46.0	42.0	66.1	61.9	59.3
Friday, 06-12-02	49.0	45.5	38.0	65.9	62.6	59.6
Saturday, 07-12-02	0.0	0.0	0.0	0.0	0.0	0.0
Summary Values						
RBL	**47.0**	**44.0**	**37.0**			
Average Leq				**65.8**	**64.0**	**59.1**

Table B.3 Typical Ambient Noise Levels: Telegraph Pole Outside 5 Moore Park Road

Date	ABL Day	ABL Evening	ABL Night	Leq 11hr Day	Leq 4hr Evening	Leq 9hr Night
Tuesday, 26-11-02	0.0	49.9	38.4	0.0	67.1	63.0
Wednesday, 27-11-02	51.8	48.5	37.3	70.9	67.4	63.5
Thursday, 28-11-02	52.4	49.6	36.1	71.0	67.7	64.1
Friday, 29-11-02	54.0	54.8	44.4	71.6	69.4	66.6
Saturday, 30-11-02	50.0	50.3	44.9	68.4	68.9	64.4
Sunday, 01-12-02	47.9	49.1	40.9	68.0	67.9	64.0
Monday, 02-12-02	52.4	50.8	43.0	70.5	68.2	63.9
Tuesday, 03-12-02	51.6	50.6	43.9	71.0	67.7	63.6
Wednesday, 04-12-02	52.8	51.2	42.7	70.9	68.3	64.7
Thursday, 05-12-02	54.0	52.2	0.0	71.2	68.3	0.0
Friday, 06-12-02	0.0	0.0	0.0	0.0	0.0	0.0
Summary Values						
RBL	**52.4**	**50.5**	**42.7**			
Average Leq				**70.5**	**68.1**	**64.3**


Measured Ambient Noise Levels
374 Moore Park Road
Tuesday, 26-11-02
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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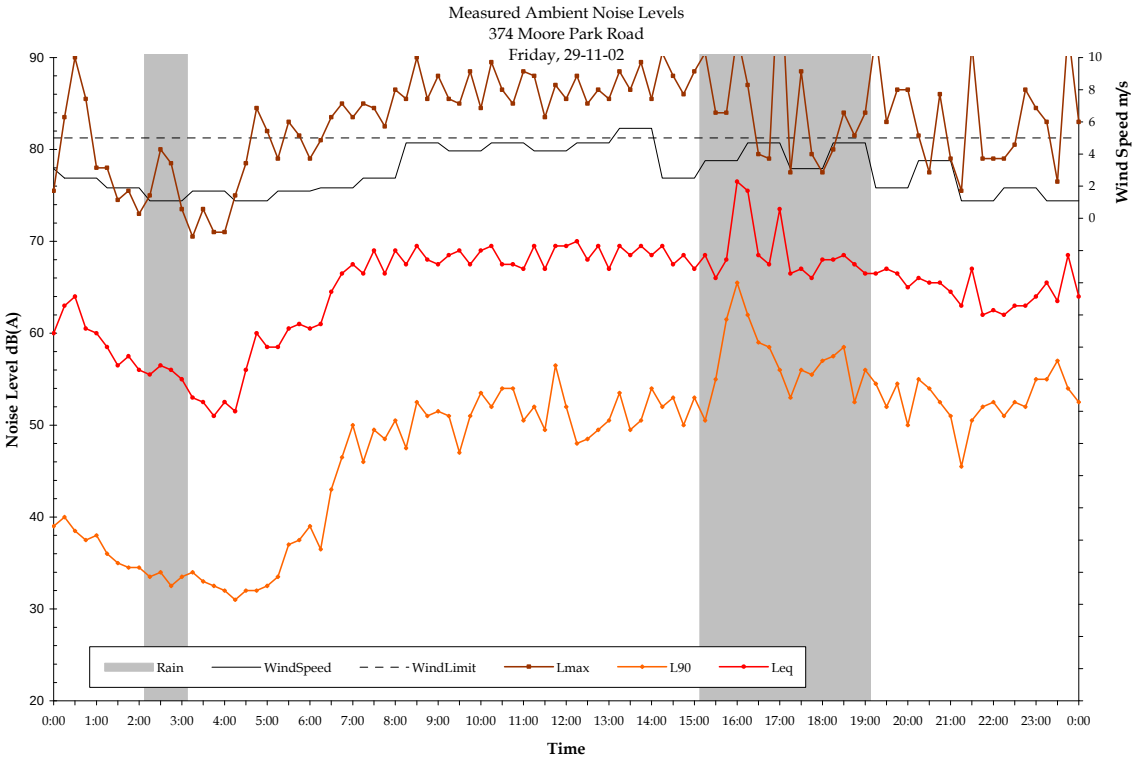
374 Moore Park Road
Wednesday, 27-11-02
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq


Measured Ambient Noise Levels
374 Moore Park Road
Thursday, 28-11-02
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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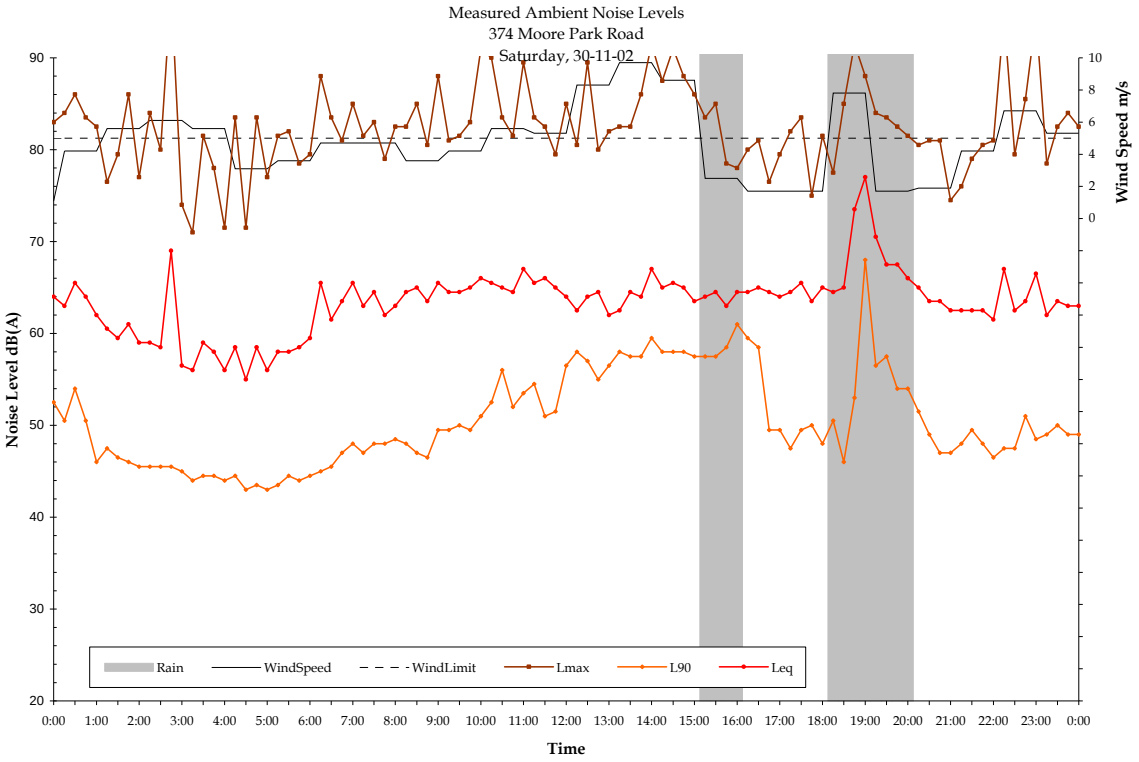
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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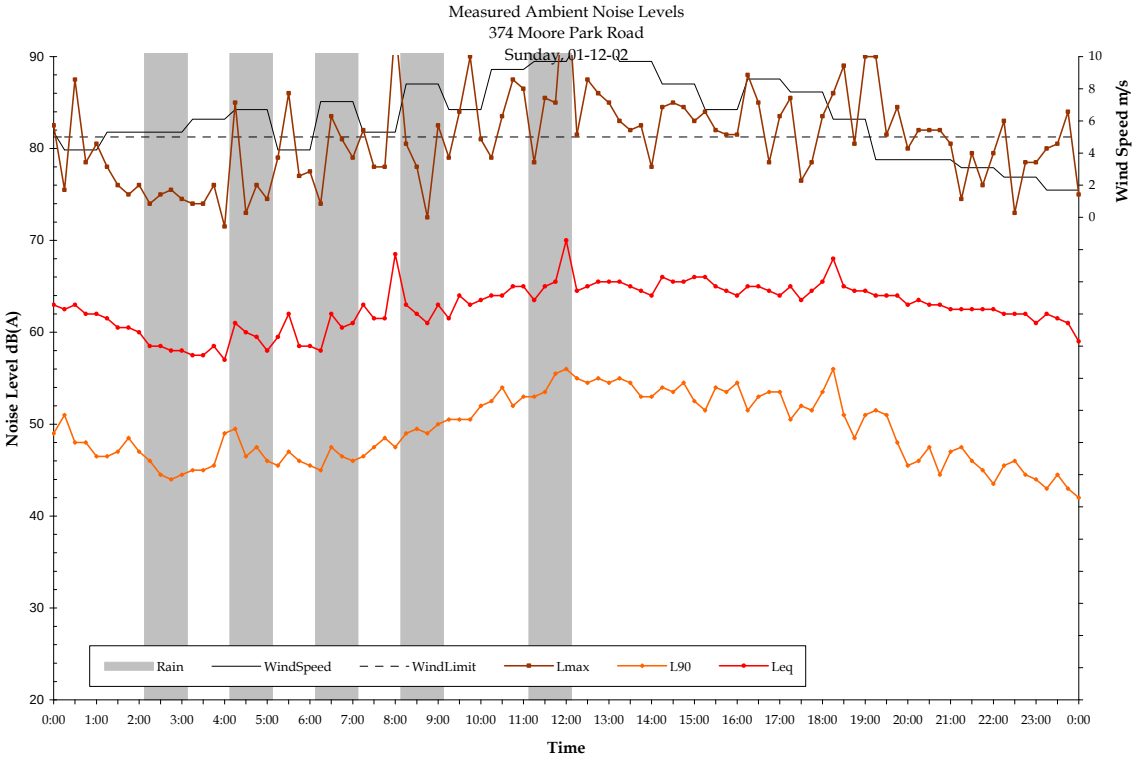
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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374 Moore Park Road
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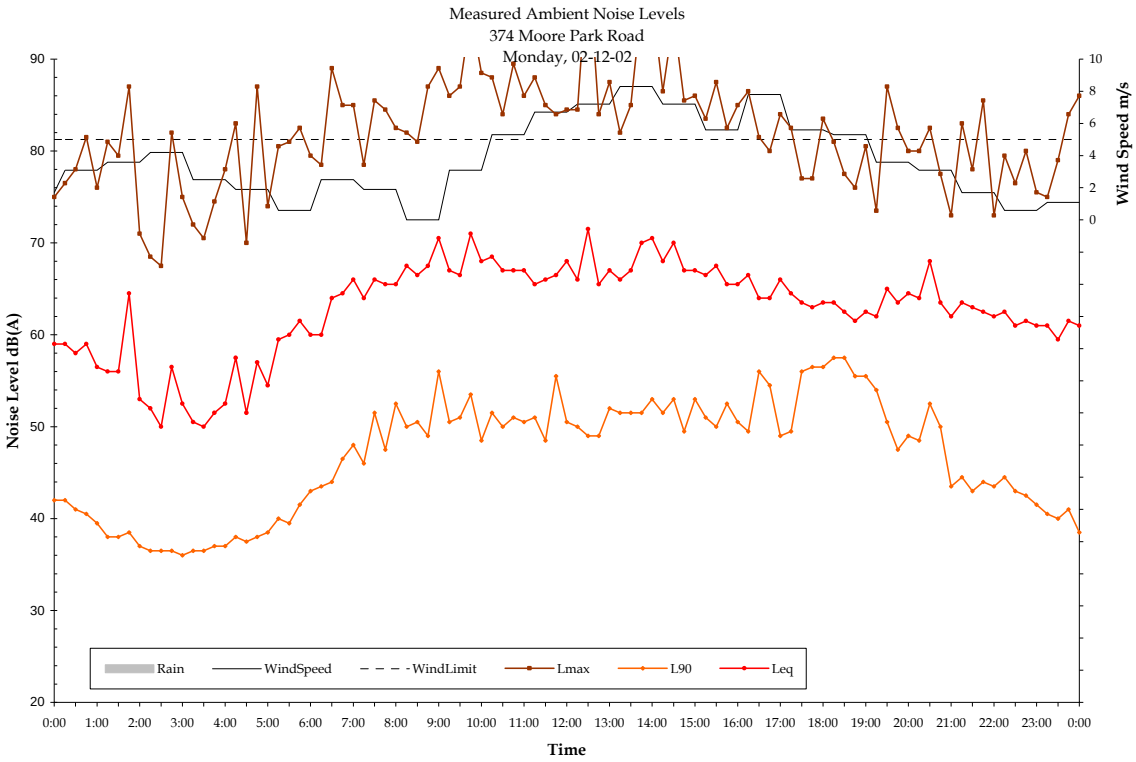
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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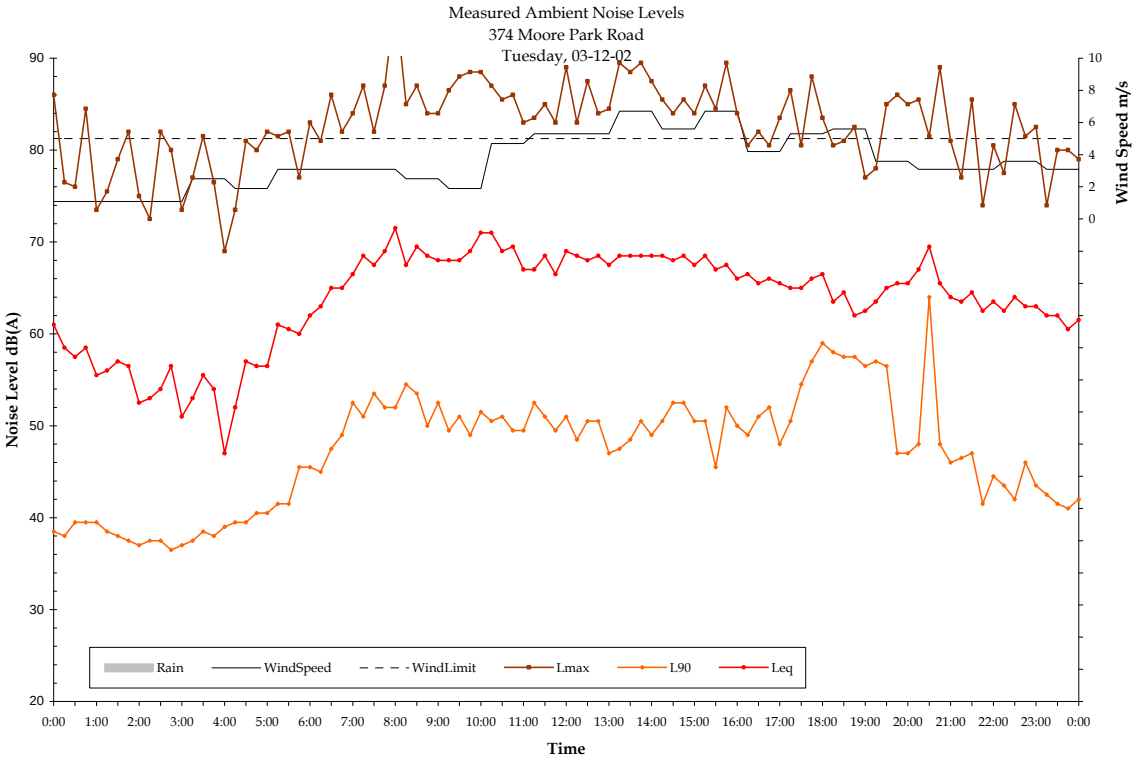
374 Moore Park Road
Monday, 02-12-02
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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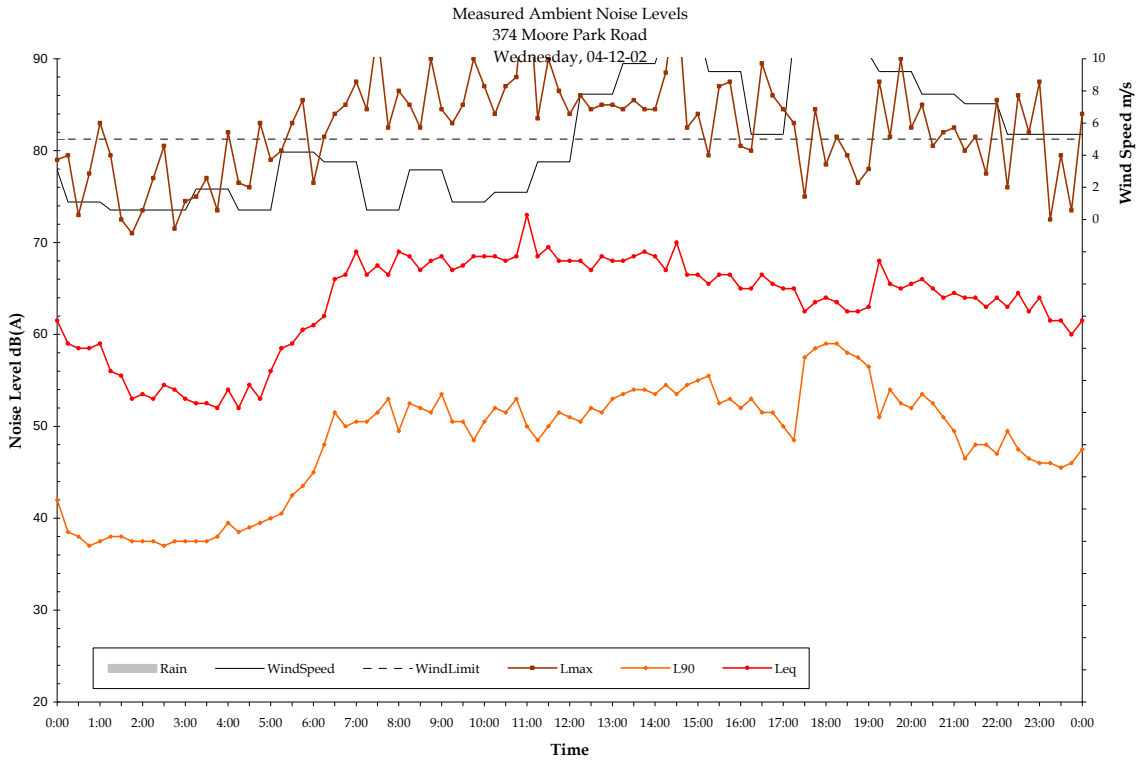
374 Moore Park Road
Tuesday, 03-12-02
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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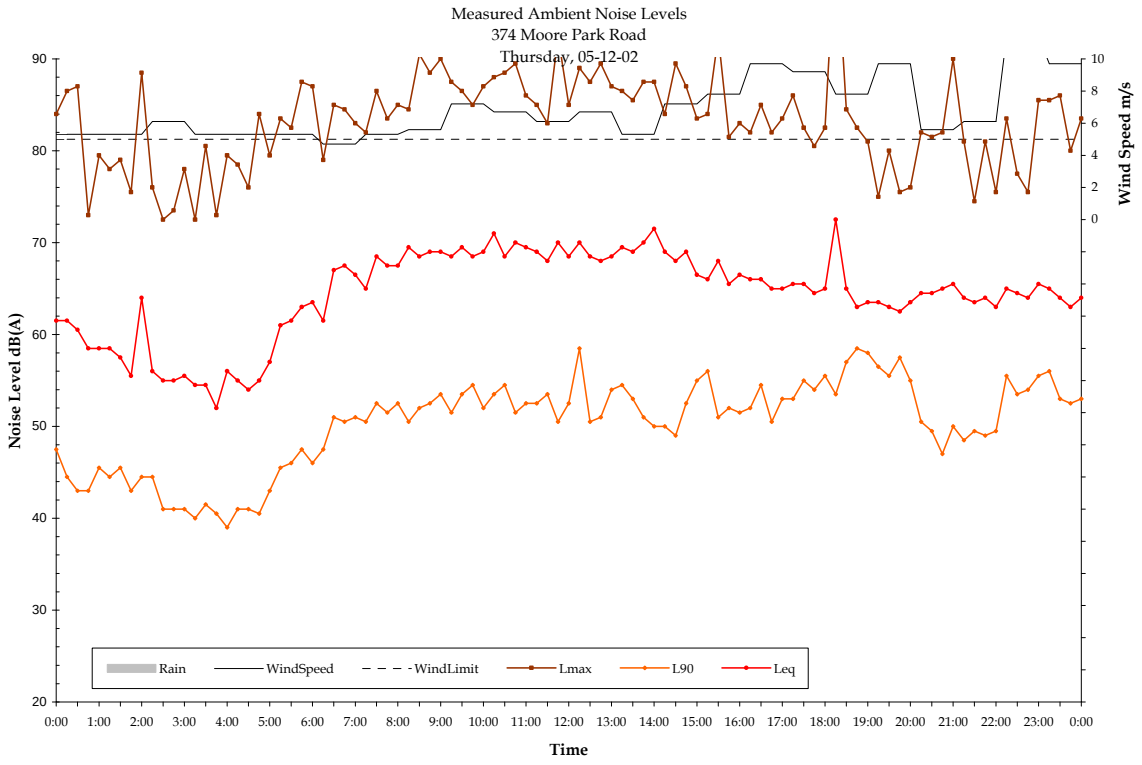
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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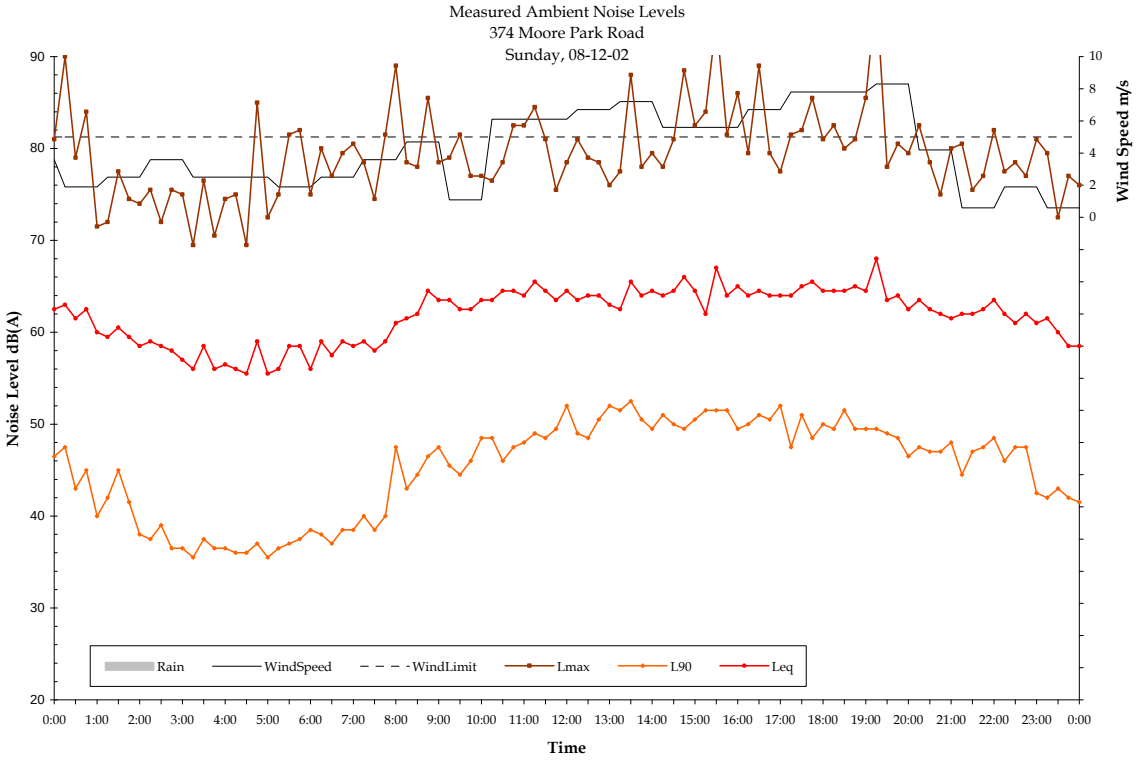
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq


Measured Ambient Noise Levels
374 Moore Park Road
Friday, 06-12-02
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
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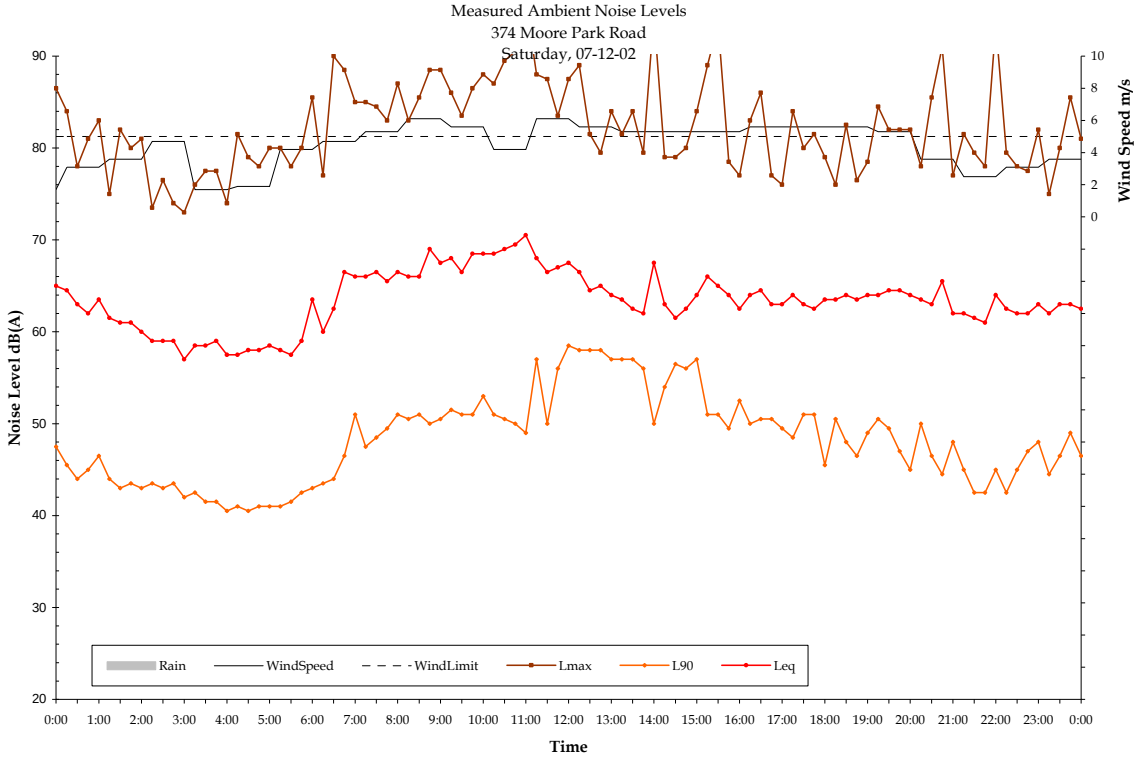
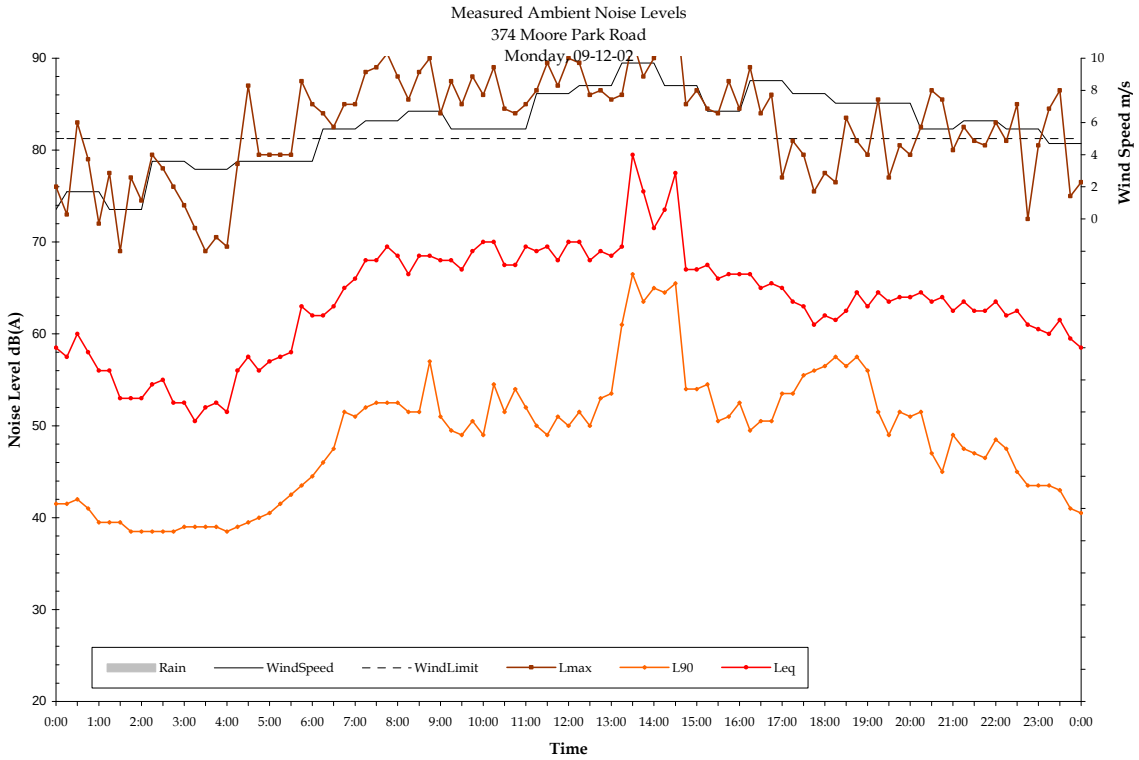
Leq


Measured Ambient Noise Levels
374 Moore Park Road
Saturday, 07-12-02
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq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374 Moore Park Road
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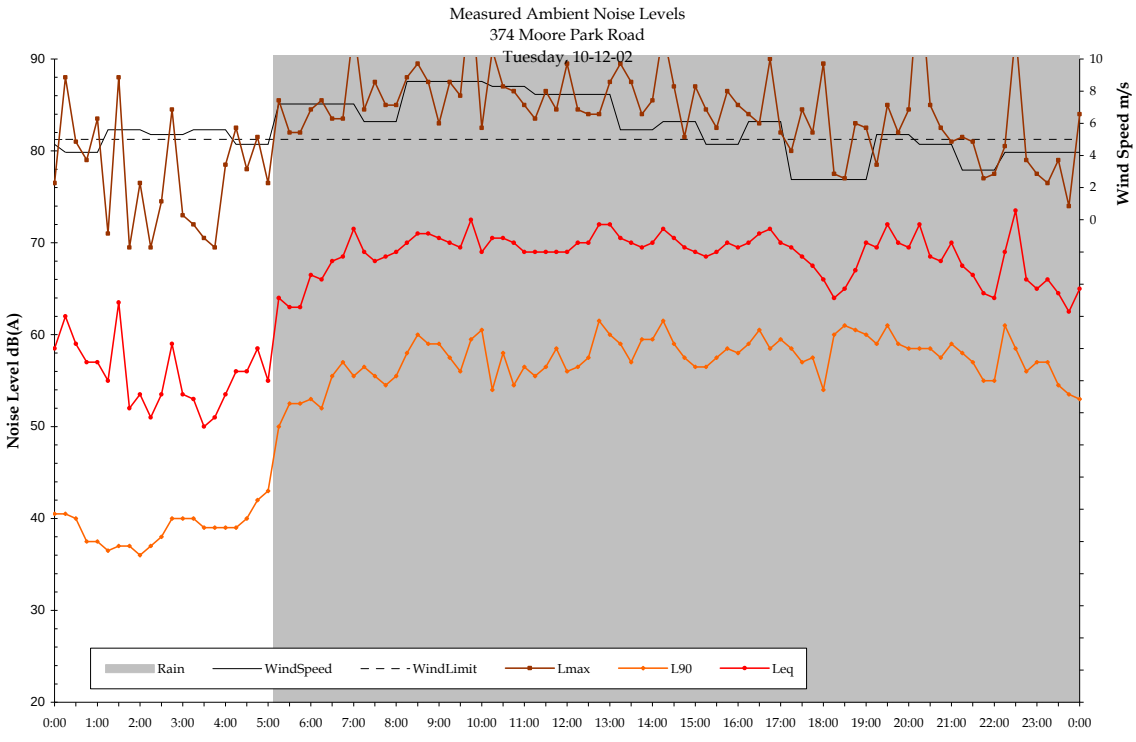
Noise Level dB(A)
Wind Speed m/s
Time
Rain
WindSpeed
WindLimit
Lmax
L90
Leq


Measured Ambient Noise Levels
374 Moore Park Road
Tuesday, 10-12-02
Noise Level dB(A)
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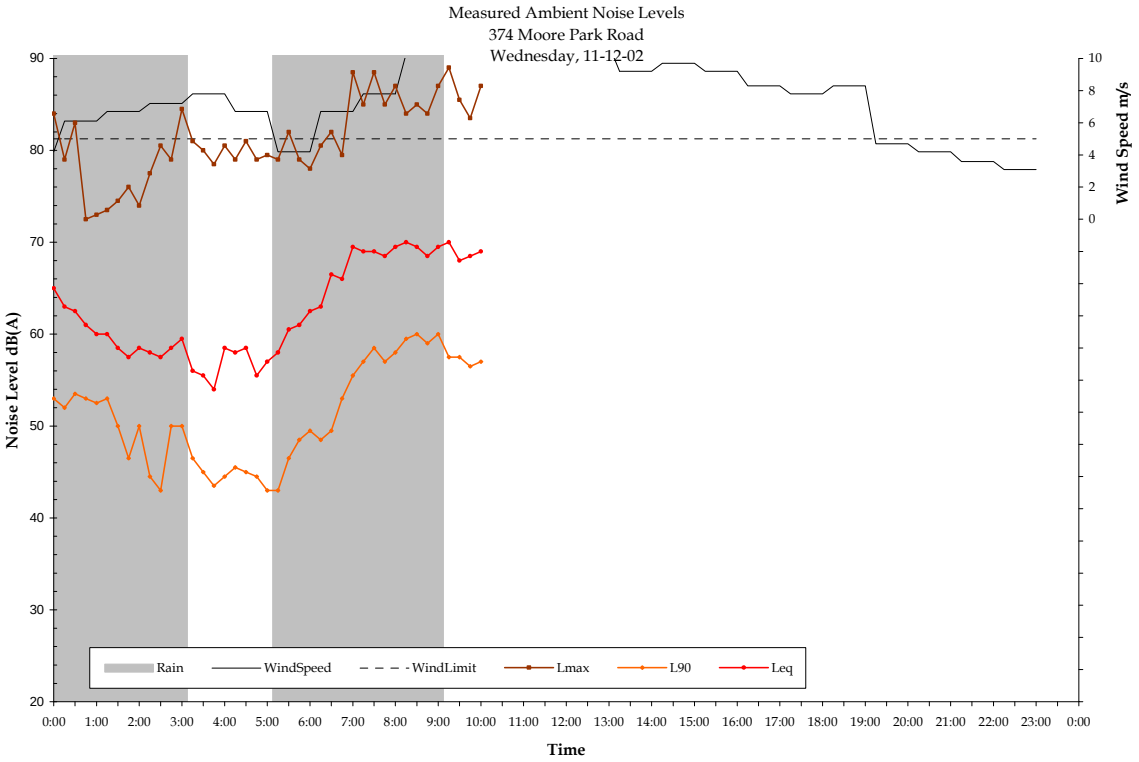
Rain
WindSpeed
WindLimit
Lmax
L90
Leq
Time


Measured Ambient Noise Levels
374 Moore Park Road
Wednesday, 11-12-02
Noise Level dB(A)
Wind Speed m/s
Rain
WindSpeed
WindLimit
Lmax
L90
Leq
Time

Annex C

Survey Guideline - Questionnaire

Annex D

Focus Group Guideline

Focus Group Guideline

1. Introduction
    - Who are you and how long have you lived in your current home?
    - Where is your nearest entrance to the park?
2. Locate people on the map.
    - What do you hear from the park?
    - When do you hear it?
        - Weekday
        - Time
        - Particular event
    - When is the noise too loud? What do you do when that happens?
    - Have you noticed any change in what you hear over the years you have lived where you live now?
    - If someone buying the house next door asked you about what it was like to live next door, what would you tell them?
3. Noise Management Plan
    - Analysis of monitoring data
    - Discussion with event organisers about the measures they take to minimise impacts
    - Recommend additional strategies
        - Are there things you think should be explored?
4. Information about the Park
    - Have you ever visited the park website?
    - Received information about events?
    - What would be the best way to inform you about what is happening at the park?

5. Feedback
    - Have you ever contacted the park about any issues?
        - Who did you contact?
        - What was the outcome?
6. Thankyou.
7. Information about the project.
8. Information about any complaints so that these can be followed up.

Annex E

Interview Guideline

Stakeholder Interview Guide.

Interviewees identified by Centennial Park & Confirmed by DECC

Introduction

Good afternoon/ morning my name is ---------- from ERM. I am calling to conduct the interview with you regarding preparation of a Noise Management Plan for Centennial Parklands organised last week. You should have been contacted by DECC and Katy Fulton from ERM regarding this interview. This interview should take 45 minutes to an hour are you ready to conduct the interview now?

If yes:

The information from our interview will inform development of a Noise Management Plan for Centennial Parklands which includes Moore Park, Centennial Park and Queens Park. The aim of the Noise Management Plan is to improve noise management, particularly in relation to events where there is amplified music. The plan will also provide recommendations on how the park needs to communicate with its neighbours about noise in future.

1. Your contact details were given to us by the Park because you had raised concerns regarding noise generated in Centennial Parklands. Can you give us an outline of the issues you were concerned about?

2. Can you describe what you heard?

3. What concerned you most about the noise generated?

4. Round about how long have you lived at you current address?

5. How often do you hear noise from the park?

   (Daily, weekly, a few times a year)

6. Are there particular times of day you hear noise?

7. Have you noticed any change in the level of noise from the park?

   If yes can you describe the change?

8. What contact have you previously had with the park regarding your concern about noise?

   What has been the response?

9. If the interviewee wasn't happy with the response:

   How do you think the park should have responded?

10. Generally what should the park be doing in response to concerns about noise?

11. Are there actions which the park could take to minimise noise disturbance for you?

12. As part of the Noise Management Plan we will be recommending ways that the park can communicate with its neighbours, what is the best way for the park to keep you up to date about its activities?

13. Do you have any further comments you would like to make about noise management by the park?

Annex F

Wind Rose Data

Annex G

Octave Band Sound Power Levels

Annex H

Summary Of Phone Survey Results

Summary of Survey Results

The survey attempted to capture the responses and views of residents living in the defined area outlined in map XXX, in order to capture 90% of the complaints registered in the DECC database. The phone survey depicted the broader view of noise related issues with Centennial Park. The findings are outlined below:

- Of the 120 people surveyed, 65% (78) said they never hear noise from Centennial Parklands

- 35% (42) of the people heard noise, with 62% hearing noise every 3 – 6 months, and 97.6% of people hear noise between 4pm and 11pm.

- Of those who did hear noise, 90.5% (38) described the noise as music generated from events, 23.8% described noise as crowd noises during events. 14.3% described the noise as specific music noise e.g. "doof doof sounds." 14.3% described noise as people leaving and arriving at events.

- The most common specified events that people associated noise with were: Good Vibrations Festival (37.5%), V Festival (37.5%) and Park Life (18.8%)

- Over half of respondents who hear noise (61.9%) did not find instances when it is too loud.

- The majority of residents surveyed (69.7%) had lived at their current address for more than five years.

- A high proportion of respondents (27.5%) were aged over 65, with 20.8% of respondents aged between 36-45.

- Most of the respondents who hear noise (90.5%) felt that the benefits of living close to the park outweigh the disadvantages of being close enough to hear noise from events held there.

- Differing views of the usefulness of activities to keep people informed of noise issues were found. Most notable were:

  a) Quarterly newsletter – 30.8% found very useful, however 25.6% found not at all useful

  b) Web site – 41.0% found not at all useful, whereas 28.2% found very useful

  c) Event calendar – 33.3% found moderately useful

  d) 1800 phone number – 33.3% found not at all useful, however 30.8% found very useful

e) Advertising in local newspapers – 35.9% found not at all useful, 33.3% found moderately useful

f) Email and postal register – 37.8% found not at all useful, 24.3% found moderately useful

g) Resident meetings – 56.4% found not at all useful

h) Studies to monitor noise management – 30.8% found very useful, with 28.2% finding moderately useful

Annex I

Summary Of Focus Group Results

Summary of Focus Groups Results

The focus group results reveal the richer data on noise issues that the survey was not able to capture. Outlined below is a summary of the results from both focus groups:

Observations:

- Highest ranking response for all participants was the noise heard from large events, this included preparation and sound tests, up to 2 days.

- Residents didn't often hear noise from general public use such as horse riding, cycling, films etc

- Noise heard from people returning to their cars after large and small events including concerts, festivals and Moonlight Cinema

- Participants described their experience as "feeling the bass and the doof doof sounds."

- The wind plays a part in noise impacts – hear more when the wind changes direction

Key Issues:

- Most of the participants felt that noise they heard generally did not impede or affect them, and they enjoyed having events in the park

- However, some residents felt that the noise from large events is too loud and impacts intrusively on their lives

- Participants felt that noise complaints were not responded to, or ignored, and that the Trust is unaccountable

- Feeling that the number of events now is bearable, but fear that the number of large events will increase in future

- Participants felt there was no noise management or control that they could visibly see – both during the event, and after the event with patrons exiting the park and returning to vehicles

- Associated problems with large events that do affect residents:

    - Traffic noise
    - Traffic congestion
    - Parking availability
    - Rubbish

- Crowds leaving events
- Anti-social behaviour – ringing door bells, urinating in pots
- Street noise

- Major issue for participants was the lack of communication from the Park, regarding when events are on, when they are due to be finished and what would happen if events infringed noise levels.

  Residents felt if the park reached out more, it would be a stronger sign of good faith, and that they were being acknowledged and considered in decisions.

- People felt that it was more bearable if they were aware of when the events were held, and when they were scheduled to finish as they could re organised their lives around it – i.e. moving their cars, making other plans.

- Participants felt that noise went over time for concerts, large events and even smaller events.

Technical Issues:

- Participants inquired about:
  - how noise was monitored in the park
  - how the stages were set up and if they could be placed differently to minimise the noise
  - noise monitoring – seeing how it was done, and where, when etc.
  - what the future plans for the park and events are
  - how the speakers were set up for each event, i.e. concentrated on the crowd or directed outwards

Solutions:

Participants in the focus groups outlined a number of solutions they would like to see in terms of noise management:

a) Monitoring and Technical Management:

- Limit sound check from the day before
- Harsher penalties for those events/promoters that go over the noise limits i.e. "one strike and you're out."

b) Traffic and People Management:

- Use the Oxford Street bus depot more effectively and in partnership with the events
- Combining a bus, train or ferry ticket into the event ticket so it is not a car reliant event
- Dedicated parking space such as the race course, where buses can shuttle patrons back to designated parking areas.

c) Communication:

- Improved open communication and information from the Park with residents
- Notice boards around the Park displaying event dates and times
- Free advertising page in the Wentworth Courier (although this does not reach the 18 year olds)
- Posters on telegraph poles is one of the ways the younger residents knew about events
- Improved 1800 number – where residents are acknowledged and responded to

d) Compensation:

- If the noise and events get worse, consider compensation i.e. glazing on houses that are really affected, similar to airport noise.
- Those who weren't affected by the noise liked the idea of tickets to events, however those who were unhappy about the noise found the idea offensive.

e) Other

- Different range of events that reflect the values of the Park as a natural space
- Events that are not as loud or noisy, e.g. Jazz in the Park.

Annex J

Summary Of Stakeholder Interviews

Summary of Stakeholder Interviews

The stakeholder interviews reveal the issues and concerns that specific residents have with management of the noise generated in Centennial Parklands. Outlined below is a summary of the main issues.

Issues of Most Concern:

- Noise generated by the large events including: rehearsals, sound checks, exiting crowds, street noise, impact of reverberation & bass – very intrusive.

- Impacted and disturbed by disorderly crowds leaving the events, traffic generated by the events, the personal security issue of loud and intoxicated crowds, general rubbish left by exiting crowds, damage to Centennial Parklands as result of event, anti-social behaviour of crowds.

- Social public health issue that is associated with the events – it is being viewed as the Trust promoting and endorsing events that encourage anti-social drinking/drug culture.

- Contact and Communication with Centennial Park and Moore Park Trust:

    - Residents are frustrated with the lack of consistent communication from the Trust itself. Lack of communication about event scheduling – residents feel as though there is a distribution problem and some areas are continually overlooked for various reasons. (One stakeholder outlined the problem with letterboxes facing the back of the house, so newsletters rarely reach the area.)

    - Residents have rung and left complaints numerous times with City of Sydney, but feel that their complaints are not registered correctly – no record recognised with Council when residents have followed up.

    - Residents feel the City of Sydney's complaints system (1800 number) does not work – unsatisfactory, struggle to get through, no response

    - Belief that the City of Sydney Council reports don't truthfully reflect the number of complaints or sentiment of residents.

    - Residents relationship with the Trust is strained – lack of response, residents views ignored, uninformed of events.

- Lack of understanding of technical levels of noise – what the levels are, or how they are arrived at.

- Despite independent sound monitoring being conducted, questions of accuracy of the noise monitoring and the readings found – lack of visible monitoring and reliability of results.

- Perceived impacts of events on ecology and regeneration capacity on the park itself – concern about possible environmental damage to Centennial Parklands.

- Concerns about the commercialisation of Centennial Parklands – other funding options should be considered that don't impact so greatly on the surrounds and the Parklands.

- Inappropriateness of having large concerts and events in such a high density inner city suburban area that was not purpose built for it.

- Wind control issues - sound is so wind dependent that it is not appropriate to be having these events so close to people's homes.

- Concerned that there will be an increase in the number of large events or festivals in Centennial Parklands (despite DECC cap on events).

- Perceived lack of disclosure from Centennial Park and Moore Park Trust .

Solutions or Areas to Improve:

The following areas were emphasised by the stakeholders, as actions which would could address those issues which were generally raised:

- Review and improve the complaints management systems relating to events held in Centennial Park. This was a key theme throughout the interviews. This is a complex issue as it relates to the systems currently in place at CPMPT and those of Sydney City Council. Several stakeholders did not distinguish between telephone complaints lines operated by CPMPT, City of Sydney and those which might be operated by the event organisers. A poor response and failure to record complaints to any of these contact lines was attributed to CPMPT. A review would aim to simplify this system where possible and improve information about complaints management systems which are in place.

- Liaise with City of Sydney to ensure their 1800 number and complaints management system is operational for the Trust's Moore Park events. Complaints received by the Council should be registered, acknowledged and actioned.

- Ensure the Trust's consistent contact number is maintained for every event and complaints continue to logged and followed up.

- Expand current notification of Residents Associations re: events.

- Improve resident notification methods and improve relationship with the residents.

- Continue to 3rd party noise monitoring – with transparent and technically reliable readings.

- Continue to respond to the breeches and complaints – act on these, reduce the noise.

- Continue to include bonds in licences with promoters for exceeding the noise limits and leaving the Parklands and surrounds in an unclean state.

- Communicate with residents and stakeholders regarding the harm minimisation requirements the Trust places on event promoters, with regard to alcohol and drug use.

- Continue to improve traffic and crowd management after the event - use local traffic only parking options to minimise traffic congestion after event. Make sure these endeavours are communicated effectively to residents in a timely fashion.

- Continue to improve post event cleaning of Centennial Parklands and its surrounds. Again, communicate with residents regarding this commitment and the fact that the promoter pays for cleaning and any repairs – in addition to the fees.

- Explore the potential to further minimise environmental impacts on Centennial Parklands through the nature of events staged.

- Increase community awareness of the criteria and guidelines for each event, as well as what acceptable noise levels are.

- Educate the community about the financial realities facing the Trust. The Trust is now 90% self-funding and events continue to make a vital contribution to the maintenance of the Parklands.

- Most residents advocate and support Centennial Parklands – they see themselves as "custodians" of the Parklands. This energy and support is a potential untapped resource for the CPMPT.

Annex K

Raw Data Tables Of Survey Results

Annex L

Copy Of Newsletter

Annex M

Event Notification Procedure