Final Environmental Noise Report

Electric Garden 2018
Brazilian Field, Centennial Park
27th January, 2018

Prepared for

Centennial Parklands Trust
Mrs Macquarie's Rd
Sydney, NSW 2000

Prepared by

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A. Introduction

The P.A. People were engaged by the Centennial Park Trust to provide Environmental Noise Management and Monitoring Services for the Electric Garden 2018 music festival.

This document is the final report outlining the process and procedures employed by our Company to assist the venue and the event organiser to manage the environmental impact of this event on the surrounding residential areas of Centennial Park. The document is intended to fulfil the requirements of the sound monitoring report as required by the Centennial Park Trust to comply with Clause 17 (a) through (l) of the Trusts Prevention Notice No 1002139 SR125 dated 26-Feb-2001.
In order to proactively prevent perimeter sound pressure levels exceeding the levels set by the regulator, The PA People provided SPL*net* - a networked, real time sound pressure level monitoring system.

Sound pressure levels from five (5) fixed SPL data collectors located at key perimeter locations along with two (2) fixed SPL monitors at FOH mix positions were centrally monitored in real time. During the event two (2) additional mobile sound pressure level monitoring engineers supplemented the SPL*net* system. These mobile monitors were used to patrol the perimeter, verify SPL*net* measurements and to conduct location specific measurements in response to any received complaints.

This report comprises:

- An introduction
- Event Details
- Environmental Noise management approach
- Monitoring Details
- Results
- Appendices

The P.A. People prepared the report for this event, under the guidance of Chris Dodds M.A.A.S (Managing Director).

The report also draws extensively on our experience in other similar venues and our understanding of event operational requirements, coupled with our strong understanding of environmental noise issues as they relate to outdoor venues and live entertainment.

Please do not hesitate to contact us should you require clarification of any part of this report.

B. Event Details

B.1 Dates and Times

Electric Garden 2018 was a multi stage music festival held at the Brazilian Field in Centennial Park, Sydney from 12pm – 10pm on Saturday 27th January 2018. Sound system checks and rehearsals were held on Saturday 27th January between 10am and 12pm.

The Trust reports that 11,212 people attended the event this year.

The Trust confirms that music concluded at 22:00pm as scheduled.

The event, rehearsals and sound tests were all held within the licensed hours nominated and contained in the venue licence and the event plan.

B.2 Schedule of Acts

A complete schedule of acts can be seen below. In general all acts conformed to this schedule.

Main stage	**Start**	**Finish**
Fatboy Slim	20:30	22:00
Gorgon City	18:45	20:15
MK	17:15	18:45
Robbie Lowe	***16:15***	***17:15***
Armand Van Helden	14:30	16:15
Doorly	13:00	14:30
Local	***12:00***	***13:00***
Southern Sounds	**Start**	**Finish**
Motez	20:30	21:30
Young Franco	19:30	20:30
Kilter	18:30	19:30
Roland Tings	17:15	18:15
Aston Shuffle	16:15	17:15
Luke million	15:15	16:15
Bella saris	14:00	15:00
Willaris K	13:10	13:50
The colour castle	12:00	13:00
Circo Loco Arena	**Start**	**Finish**
Dubfire	19:30	21:30
Nicole	17:30	19:30
Art Department	16:00	17:30
Apollonia	14:00	16:00
Clive Henry	13:00	14:00
Kerry Wallace	12:00	13:00
RIO The Hangout	**Start**	**Finish**
Jeremy Olander	19:30	21:30
Henry Saiz	18:00	19:30
Petar Dundov Live	16:30	18:00
Edu Imbernon	15:00	16:30
Ricky Cooper | Andy EF	13:30	15:00
Zankee Gulati | Tristan Case	12:00	13:30

B.3 Weather Conditions

Weather conditions were monitored via the weather station monitor in the Centennial Park administration offices rather than using the bureau of Meteorology website as this was decided to be more accurate for the immediate area.
It is noted that temperatures were mild, ranging from 24-28°C with humidity from 77%-89%.
Wind was from an easterly direction with speeds of 5-10km/h.
There was no rain reported on the 27th January.
It can be summarised that the weather conditions during the Electric Gardens 2018 festival were mild.

C. Environmental Noise Management Approach

C.1 Mitigation before the Event

T1000 the event organisers for Electric Garden 2018 are a well-established organisation with a good history of managing its noise emissions on event sites.

Audio system design has historically been carried out by the sound system contractors with the dual goal of reducing emissions, whilst maintaining acceptable performance for the artist's requirements. On this occasion we are satisfied that the systems provided for event was of an appropriate professional standard and level of performance.

The P.A. People also reviewed the site layout plan prior to the event.

Our client's Noise Management Plan forms the basis for sound monitoring for Electric Garden 2018.

C.2 Mitigation during the Event

The SPL*net* system was used to continuously monitor and log noise levels at the event site.

The engineer at event control was able to use this data, in combination with the subjective analysis of the information received from the mobile monitoring engineer, to identify the source of any sound pressure level exceedances at the event perimeter. Any perimeter exceedances detected by SPL*net* or mobile monitoring engineers caused by external factors were identified. Any potential exceedances caused by Electric Garden 2018 sound reinforcement systems were identified and immediately actioned by event control.

Event control set dynamic SPL thresholds and exceedance indicators for the FOH positions. These thresholds were based on the stage's effect on perimeter SPL conditions. Therefore, the sound engineer was be able to proactively adjust the sound pressure level produced by the stage based on its' effect on perimeter conditions at any given time.

C.3 Mitigation after the Event

The Trust, the P.A. People and the organisers of Electric Garden 2018 regard the management of environmental noise for this event to be appropriate and in compliance with the venue License and the EPA Prevention Notice. It is proposed that this level of sound monitoring and management is implemented for future events of this nature at Centennial Park.

D. Monitoring Details

D.1 Details of Measurement System

To monitor perimeter sound pressure levels for Electric Garden 2018, The PA People provided a networked, real time sound pressure level monitoring system based on SPL*net*.

Key features of this system include:

- The centralised logging of SPL data includes information as to when stages are notified of exceedances or, to the best of our knowledge, impending exceedances, to ensure immediate action from the stages otherwise penalties are implemented from the sound bond.
- When notified of a complaint, sound control can immediately identify readings at the perimeter so there is an immediate measurement in the vicinity at the time of the complaint before the roving sound monitor arrives at the complaint location. This allows more accurate and immediate response to the complainant, and if there is an exceedance this can be immediately rectified centrally while the mobile sound monitor is being dispatched to the residence.
- The communication lines between identifying an exceedance and notifying the offending stage are more streamlined.
- All logging meters work in all weather conditions. Most logging meters currently employed for event monitoring in Australia are affected by wet weather or cannot be used at all.

As noted previously, the SPL*net* system is focused on proactively preventing perimeter sound pressure level exceedance.

Sound pressure levels for the Electric Garden 2018 event were centrally monitored and recorded from fixed SPL meters located at five (5) key perimeter locations, and centrally monitored from two (2) FOH mixing positions in real time. During the event two additional mobile sound pressure level monitoring engineers supplemented the SPL*net* system. The mobile monitoring engineers were used to move between stages and patrol the perimeter and verify the SPL*net* measurements and to conduct location specific measurements in response to any received complaints.

The SPL*net* system was used to continuously monitor and log noise levels at the event site. The SPL*net* system continuously recorded data from each of the five (5) SPL*net* perimeter monitors for the duration of the event.

The engineer at event control was able to use this data, in combination with the subjective analysis of the mobile monitoring engineers, to identify the source of sound pressure level exceedances at the event perimeter. Any perimeter exceedances detected by the SPL*net* system or the mobile monitoring engineers caused by external factors (i.e. not due to sound emanating from the event) were identified. Similarly exceedances caused by the event sound reinforcement system could be identified and immediately actioned by event control.

Fast dB(A) and dB(C) SPL measurements for all SPL*net* meters were simultaneously monitored by the engineer at event control.

Fast dB(A) and dB(C) SPL results for the stages were also monitored at the FOH mixing position by the sound engineers. Dynamic SPL thresholds and exceedance indicators were set for the FOH positions by event control. These thresholds were based on the stage's effect on perimeter SPL conditions. Therefore, the sound engineer was able to proactively adjust the sound system outputs to maintain predetermined sound pressure levels based on their effect on perimeter conditions at any given time.

D.2 Site Plan and Measurement Locations

The P.A. People reviewed the Centennial Park Trusts' prevention notice and noise management plan. This information assisted us in formulating the event monitoring strategy that was implemented for this event.

D.2.1 Perimeter Monitoring

As per the requirements outlined in the Centennial Park Trust prevention notice for this category of event five (5) perimeter locations were used for the installation of a fixed sound pressure level monitoring instruments. At these locations the instrument was attached to a light pole at a height of approximately three (3) metres.

The instrument cabinet comprises the following items:

- SPL*net* M100 analyser complete with third octave analysis software
- SPL*net* M121 Type 1 measurement microphone fitted in a weatherproof enclosure
- Battery and 4G mobile broadband modem

The five (5) fixed locations were in the vicinity of:

8 Martin Rd
34 Lang Rd
60 Oxford St
60 York Rd
85 Darley Rd

To proactively manage levels at the perimeter of the event site, the engineer uses the fixed location data collection units. If the engineer detects any exceedance of the limits set out in the prevention notice a roving monitor is dispatched to the location to conduct location specific measurements and determine if the exceedance is a result of the amplified sound from the event.

These measurements are conducted using a class one portable analyser mounted on a tripod stand at a height between 1.2m-1.6m above ground, this meter when practical would be placed within 1m of the boundary of the nearest affected premises in relation to the fixed monitoring location.

D.2.2 Stage Monitoring

Two (2) systems were also located within the event boundary, at the Front of House mixing location for the main stage and the Circa Loco stage. At these locations an instrument was attached to the supporting structure of the platform.

The instrument cabinet comprises the following items:

- SPL*net* M100 analyser complete with third octave analysis software
- SPL*net* M121 Type 1 measurement microphone fitted in a weatherproof enclosure.

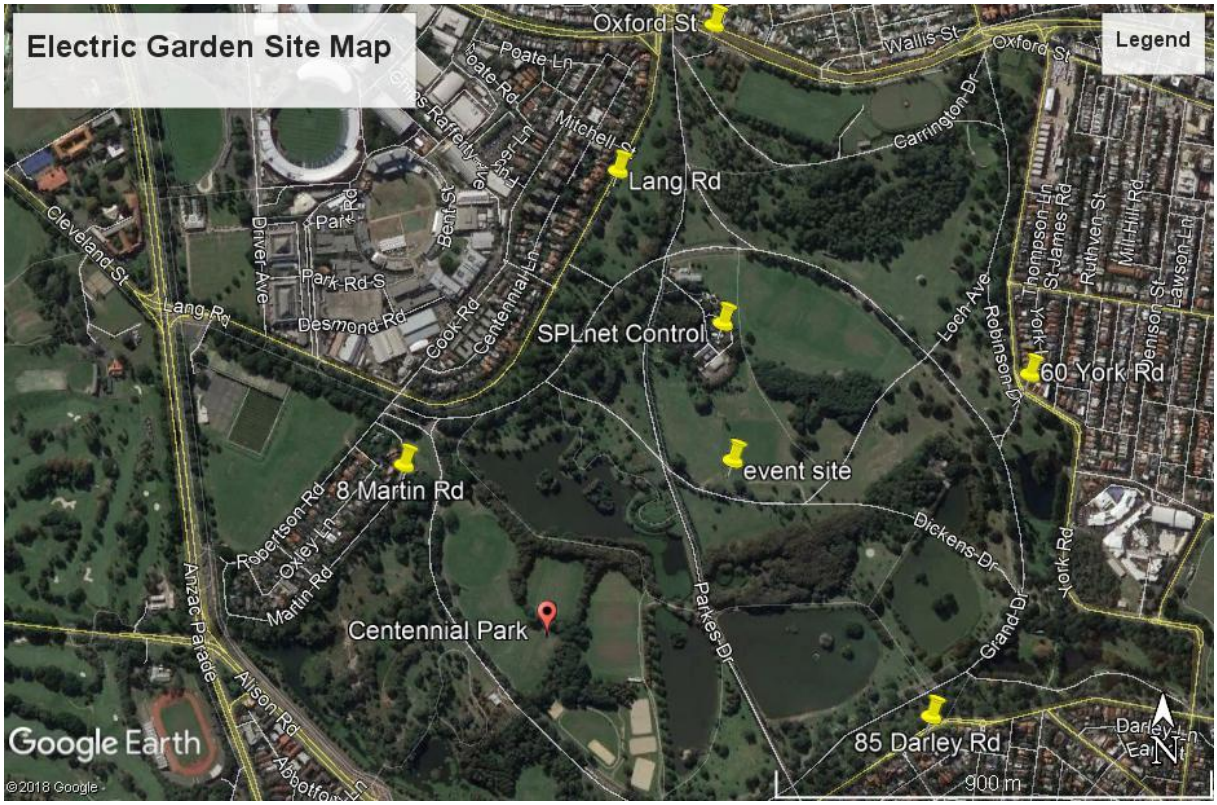
D.2.3 Mobile Monitor

Two mobile monitoring personnel were also available to patrol the perimeter, corroborate the SPL*net* measurements and to conduct location specific measurements in response to any received complaints or exceedances noted by the engineer.

The remote monitoring engineers were provided with a Type1 sound analyser complete with calibrator.

D.2.4 Site Plan

Below is a plan showing the relative position of the monitoring locations used for this event. It also shows the event site location.



D.2.5 Calibration

Each instrument was calibrated using either Bruel and Kjaer 4230 calibrator or a BWSA Type 660 calibrator prior to and after use.

No significant variations were noted between pre and post use measurements.

D.3 Use of Third Octave information

A feature of the SPL*net* system is the capability for third octave analysis at all measurement locations, again in real time.

This capability is significant in that it allows the audio operators of each system to tailor the response of their system to maximise the perceived level of their system by adjusting spectral content of the music, rather than relying on level only.

This also reduces the annoyance factor of the noise by reducing dominant frequencies and smoothing the resultant frequency response.

D.4 Complaints Management

The Centennial Park Trust has adopted a comprehensive sound management program, which includes a detailed complaints management procedure.

The focus of the P.A.People and the Centennial Park Trust for this event was to proactively minimise complaints by monitoring perimeter sound pressure levels continuously in real time. In addition to continuous static perimeter monitoring two (2) mobile monitor personnel were available to attend complainant locations personally.

E. Results

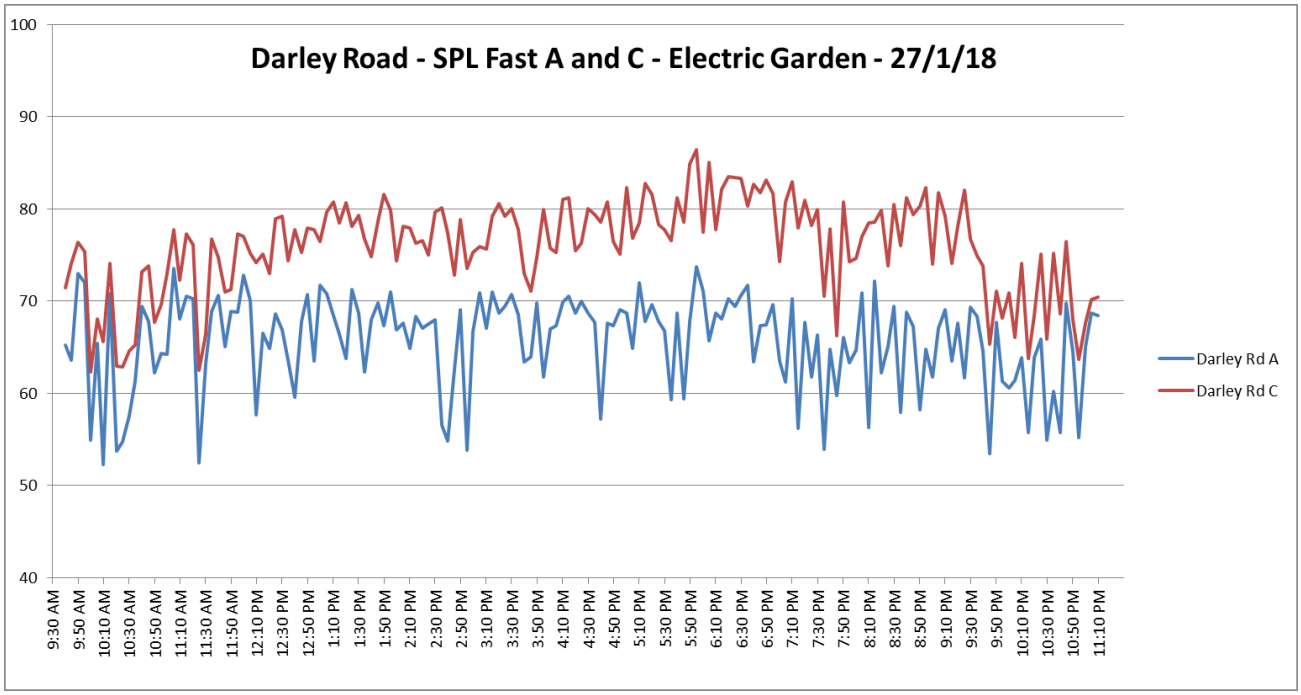
E.1 Perimeter Results

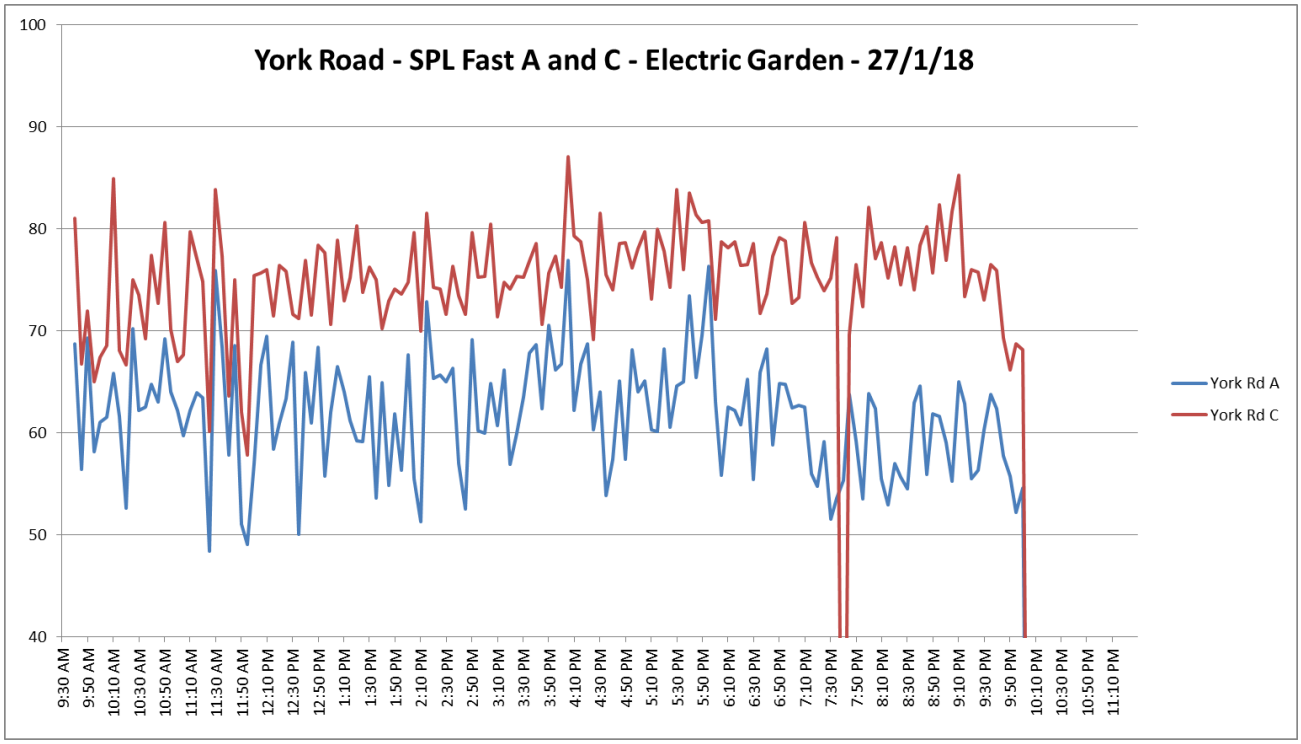
The SPL*net* system employed for this event provides a significant amount of data.

In particular one would expect that continuous monitoring of all perimeter sensors might reveal a significant increase in the number of exceedances identified. This has not proven to be the case, due mostly to the proactive approach of using this same information to adjust the exceedance thresholds provided to each stage.

Below are five (5) graphs outlining the levels at each perimeter location over the duration of the event, please note that these graphs are of limited use in and of themselves as they record absolute levels due to all environmental factors, not only levels that are associated with the sound generated by the Electric Garden 2018 stages.

Each plot represents samples taken at 5-minute intervals of a total some 50,000 points per measurement location.

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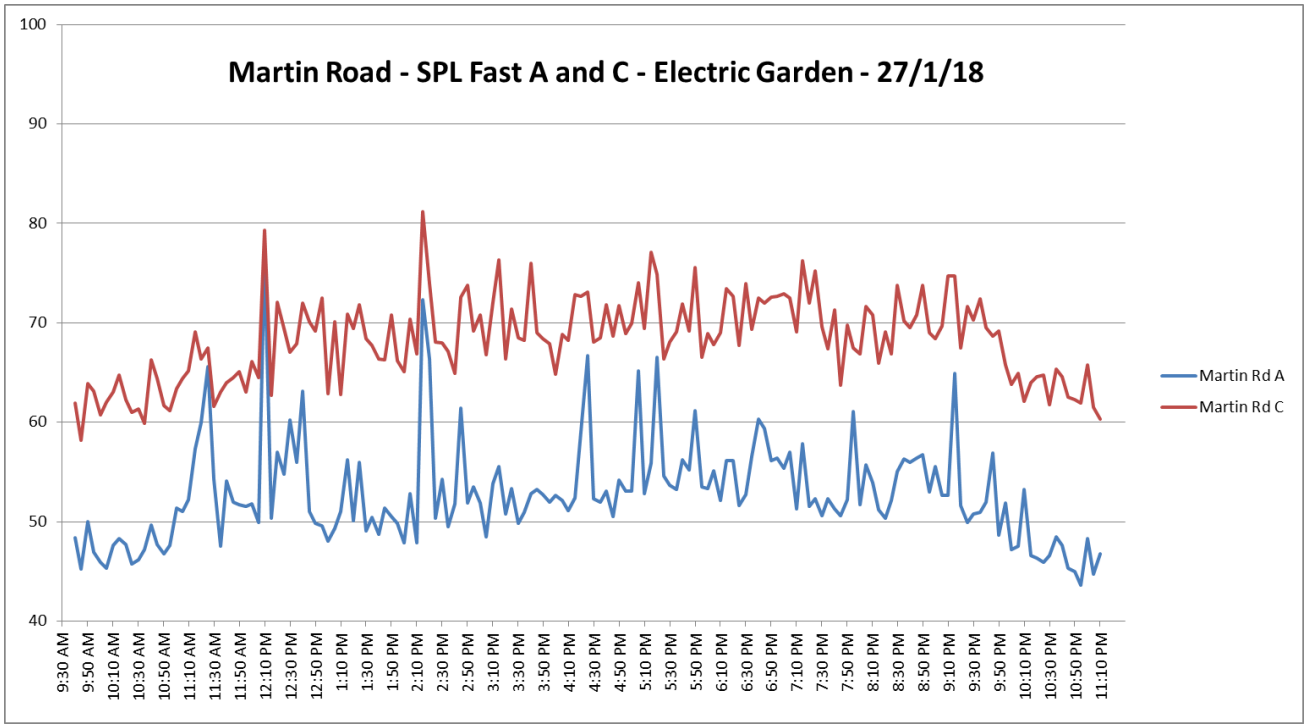
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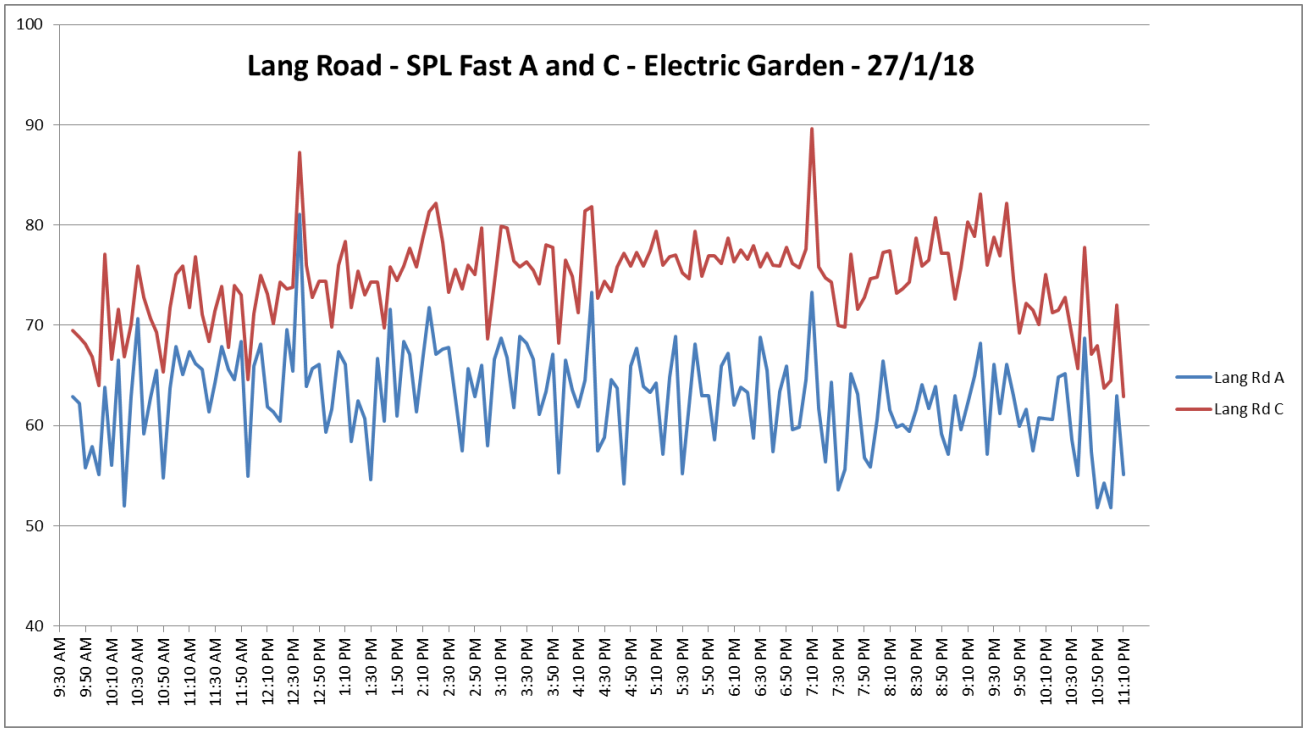
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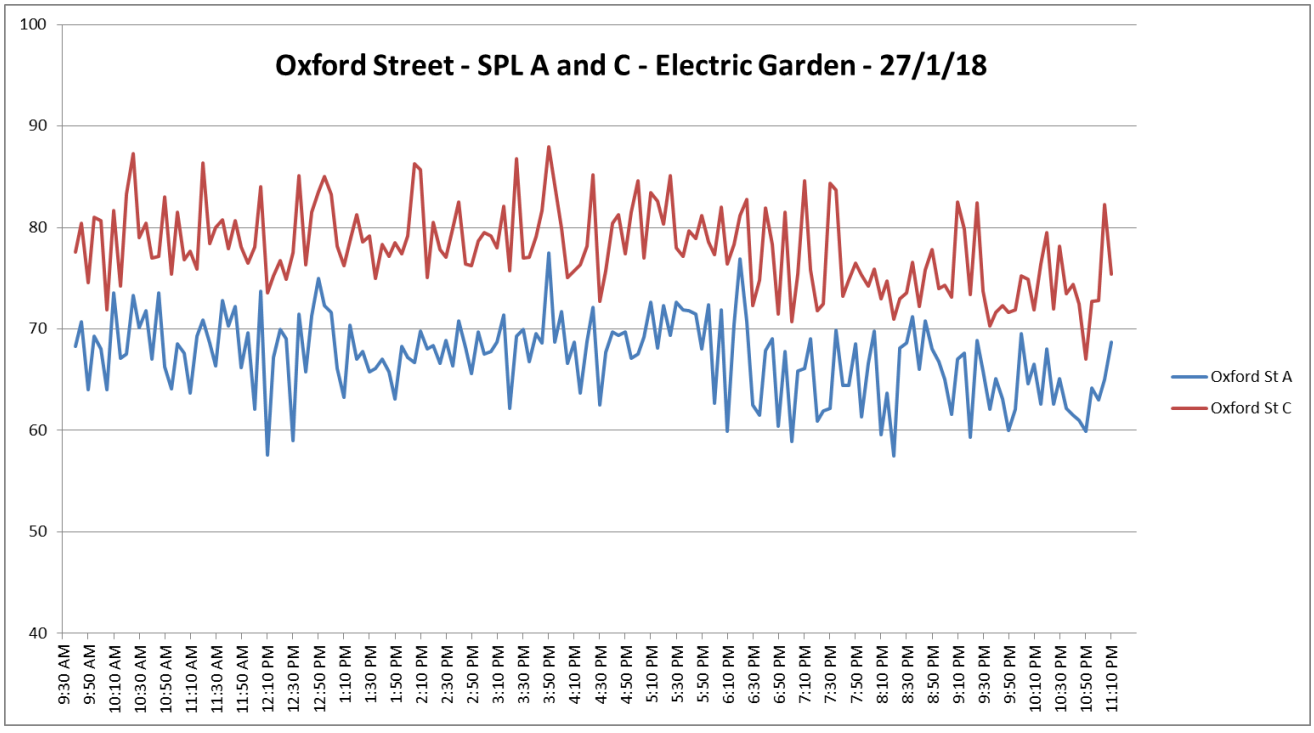
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E.2 Exceedances

As noted previously we have collected a substantial amount of data pertaining to the noise levels at the perimeter during this event.

E.2.1 Rehearsals and Sound Tests

There were zero (0) exceedances of the 65db LA Max and 85db LC Max levels caused by the amplified sound during the rehearsals and sound tests at the perimeter.

E.2.2 Main Event

There were zero (0) exceedances of the 65db LA Max and 854db LC Max levels caused by the amplified sound during the event at the perimeter.

E.3 Complaints

As confirmed by the Centennial Park Trust, there were two (2) sound-related complaints to the telephone hotline during the day of Electric Garden 2018.

The first of the two complaints was made to the hotline at 2129 from a resident in Cook Rd.
One of the mobile monitoring engineers was dispatched to the address given to the hotline and arrived there at approximately 2142.
The address is a high rise apartment building and the mobile engineer took measurements on the street outside the building. He noted that the noise from the event was barely audible and did not exceed limits as outlined in the Prevention Notice.

The second complaint was also from a resident in Cook Rd and occurred at 2143. The same mobile engineer attended this complaint at 2147 and noted the noise from the event was barely audible and did not exceed limits as outlined in the Prevention Notice.

E.4 Management Process for Exceedances

With the SPL*net* system SPL levels at all perimeter points were centrally monitored in real time from event control. The system is designed so that upon the detection of a perimeter exceedance deemed to be as a result of the Electric Garden 2018 reinforcement systems, event control would immediately contact the front of house sound control position and, or the event organiser to request a level decrease.

In general, communications between event control and the stages were prompt and effective in preventing and correcting any perimeter exceedances.

The dynamic sound pressure level thresholds set for the stage were effective in preventing perimeter exceedances.

F. Summary

Overall we believe that the implementation of the SPL*net* system as part of the environmental noise management plan for Electric Garden 2018 has improved the quality of noise management for the event and ensured overall compliance with the EPA Prevention Notice.