Final Environmental Noise Report

Electric Gardens
The Brazilian Field, Centennial Park
January 26th, 2019

Prepared for
The Centennial Parklands & Moore Park Trust
Mrs Macquarie's Rd
Sydney NSW. 2000

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A. Introduction

The P.A. People were engaged by The Centannial Parklands & Moore Park Trust to provide Environmental Noise Management and Monitoring Services for Electric Gardens 2019

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 Centannial Parklands & Moore Park Trust to comply with Centennial Park EPA Notice details - Clause 17 (a) through (h) of the Trusts Prevention Notice No 1002139, file No SR125 dated 26-Feb-2001. And Variations of Prevention Notice No 1521549 File No EF13/8821 dated 18-Feb-2015

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 audio control mix positions were centrally monitored in real time. During the event two 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. Compliance with the Prevention Notice

Electric Gardens 2019 has complied with the noise monitoring conditions of the Trusts Prevention Notice No 1002139, file number SR125, dated 26 February 2001. And Variations of Prevention Notice No 1521549 File No EF13/8821 dated 18-Feb-2015

The location of perimeter noise loggers is based on historical data of resident complaint location as directed by the RGCP Trust. In addition, guidelines on the position of stages and the type and direction of sound amplification are designed to minimise noise spill to residential areas, and noise loggers are generally positioned at the most sensitive perimeter areas. This provides consistency in approach to noise management and is reviewed for continuous improvement. An independent review of sound management for events on BGCP land provided further investigation of the most sensitive perimeter areas and provided recommendations that have been implemented for the 2018/19 season onwards to concentrate noise loggers on sensitive areas that provide data that corresponds to the event levels.

The above procedures are implemented for each event in consultation between the Centennial Parklands and Moore Park Trust representatives, The P.A. People, and the event organiser. The Centennial Parklands and Moore Park Trust representatives and The P.A. People complement this further with the review of each event Noise Management Plan, providing feedback and recommendations to further mitigate noise impact.

B.1 Exceedances

The PA People have collected a substantial amount of data pertaining to the noise levels at the perimeter during this event.

B.1.1 Rehearsals and Sound Tests

Zero (0) exceedance of the 65dB(A) limit was identified at the perimeter monitoring locations
Zero (0) exceedance of the 80dB(C) limit was identified at the perimeter monitoring locations

B.1.2 Main Event

Zero (0) exceedance of the 65dB(A) limit was identified at the perimeter monitoring locations.
Zero (0) exceedance of the 80dB(C) limit was identified at the perimeter monitoring locations.

In response to condition 17(f) of the Prevention Notice a list of all limit breeches as measured on the perimeter of the Centennial Parklands while the event sound system was in use is shown below.

It is noted at 60 Oxford Street, where the data logger was located, that it was particularly noisy prior to the event commencing, for the duration of the event and after the event had concluded. SPL measurements in this area were consistently higher than the limits set out in the prevention notice. SPL measurements in this area were confirmed by mobile monitoring engineers as being the result of local heavy traffic. Because of this, the limit breeches in this location are not noted individually here.

Similar circumstances were present at all other fixed monitoring locations on the perimeter of Centennial Park except Martin Rd.

The table below shows only limit breeches that were not the cause of local noise influences.

Time	Location	Levels	Duration	Exemption
1637	Lang Rd	69-72dBA	58 seconds	Condition 15
1847	Oxford St, York & Lang Rd	69dBA / 85dBC	32 seconds	Condition 15
1854	York Rd	68.6dBA / 84.7dBC	13 seconds	Condition 14(c)

On each occasion a limit breech was noted to have occurred the sound system operators and the production manager for the event were informed. When appropriate requests made to reduce levels. In addition to the requests for level decreases, frequency information was also provided so spectrum adjustments could be made. When Feasible a mobile monitoring engineer was sent to logger locations to verify the source of noise.

B.2 Complaints

As confirmed by the Trust, there were three (3) sound-related complaints: two (2) to the telephone hotline during the sound tests and day of the event and one (1) sound-related complaint received after the event. Mobile monitoring engineers were available on event day to respond to all telephone hotline complaints. Real time and spot measurement investigation of these complaints revealed zero (0) exceedance due to the event.

B.3 Hours of Operation

Electric Gardens 2019 took place within the nominated hours as detailed for this event.

C. Event Details

C.1 Dates and Times

Electric Gardens 2019 was a multi stage music concert held at The Brazilian Field, Centennial Park, Sydney from 1400 – 2200 on Saturday 26th January 2019.

Sound system checks and rehearsals were held on both Friday 25th January between 1600-1700 and on Saturday 26th January between 1200-1300.

The Trust reports that 8522 people attended the event this year.

The Trust confirms that music concluded at 2200 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.

C.2 Schedule of Acts

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

Beth Yen	1400-1500	Hoten	1400-1500	Local	1400-1530	Ricky Cooper	1400-1530
Set Mo	1500-1630	Mar-T/Made In Paris	1500-1600	Grun	1530-1700	Way Out West	1530-1700
Bag Raiders live	1630-1730	Matador Live	1600-1700	Sean Tyas	1700-1830	Eelke Kleijn	1700-1830
Nick Warren	1730-1845	Eats Everything	1700-1830	MaRLo	1830-2000	Guy Mantzur	1830-2000
Erick Morillo	1845-2045	Patrick Topping	1830-2130	PvD	2000-2130	Patrice Baumel	2000-2130
Sigma Live	2045-2200						

C.3 Weather Conditions

On the afternoon of Friday, 25th January it was noted by the SPLnet engineer on site that the weather was hot with consistent winds.

Temperatures ranged between 30°C and 32°C, humidity was moderate, 54 and 60%, and the winds were predominantly from the north-east at speeds between 35 and 39km/h with gusts up to 48km/h.

On, Saturday 26th January, the temperatures were lower than the previous day, ranging from 31°C in the late morning down to 23.3°C towards the end of the event. Winds were predominantly from the south south-east at speeds between 15 and 30km/h with wind gusts from 20-37km/h. Humidity at 10am was at 53% and increased gradually throughout the day to a maximum of 92%.

These observations are reflected in the information obtained from the Sydney Airport weather station on the Bureau of Meteorology website.

D. Environmental Noise Management Approach

D.1 Mitigation before the Event

T1000, the event organisers for Electric Gardens 2019 are a well-established organisation with an excellent 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 Gardens 2019.

D.2 Mitigation during the Event

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

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

The SPL*net* engineer 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 able to proactively adjust the sound pressure level produced by the stage based on its' effect on perimeter conditions at any given time.

D.3 Mitigation after the Event

The Trust, the P.A. People and the organisers of Electric Gardens 2019 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 management and monitoring is implemented for future events of this nature in Centennial Park.

E. Monitoring Details

E.1 Details of Measurement System

To monitor perimeter sound pressure levels for Electric Gardens 2019, 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 2019 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 monitors supplemented the SPL*net* system. The mobile monitors 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 SPL*net* 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.

E.2 Site Plan and Measurement Locations

The P.A. People reviewed The Centannial Parklands & Moore Park Trust prevention notice and noise management plan. This information assisted us in formulating the event monitoring strategy that was implemented for this event.

E.2.1 Perimeter Monitoring

As per the requirements outlined in The Centannial Parklands & Moore 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 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, 4G mobile broadband modem

The five (5) fixed locations were near the following locations.

- 8 Martin Road, Moore Park
- 30 Lang Road, Centennial Park
- 60 Oxford St, Centennial Park
- 85 Darley Road, Centennial Park
- 60 York Road, Queens Park

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.

E.2.2 Stage Monitoring

Two (2) systems were also located within the event boundary, at the FOH mixing locations. 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

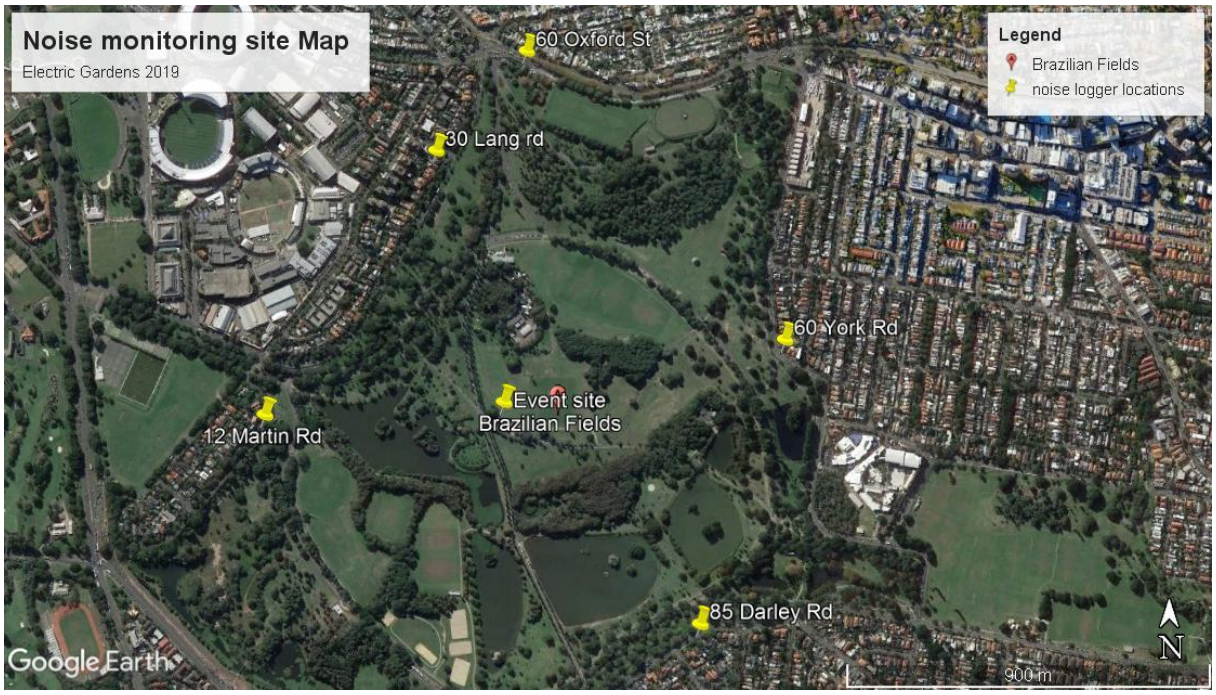
E.2.3 Mobile Monitor

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.

E.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.



E.2.5 Calibration

Each instrument was calibrated using a BWSA Type CA111 calibrator prior to and after use.
No significant variations were noted between pre and post use measurements.

E.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

E.4 Complaints Management

The Centannial Parklands & Moore 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 Centannial Parklands & Moore 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 mobile monitoring engineers were available to attend complainant locations personally.

F. Results

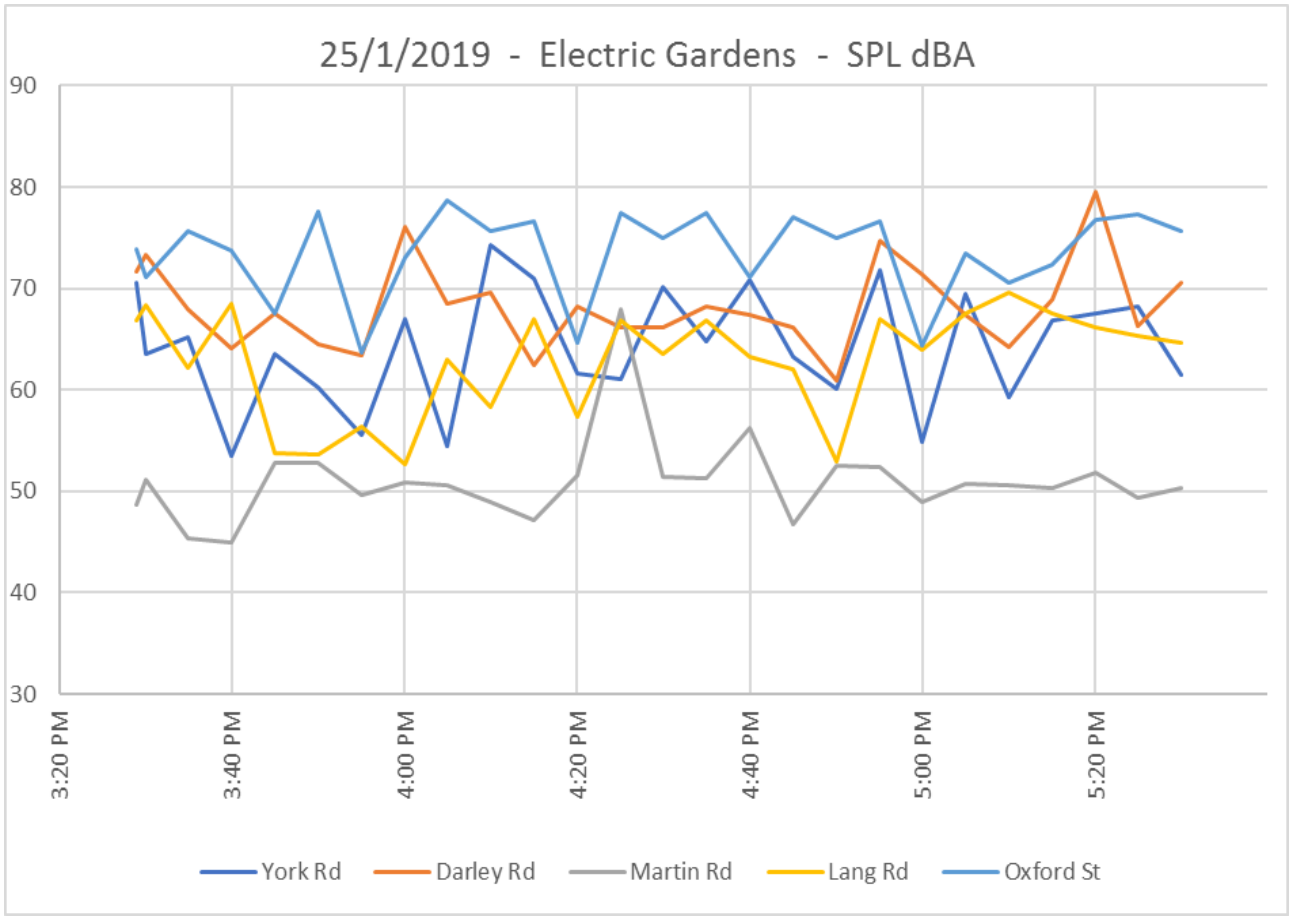
F.1 Perimeter Results

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

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 four (4) 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 Gardens' stages.

Each plot represents samples taken at 5-minute intervals of a total some 3600 points per hour at each measurement location.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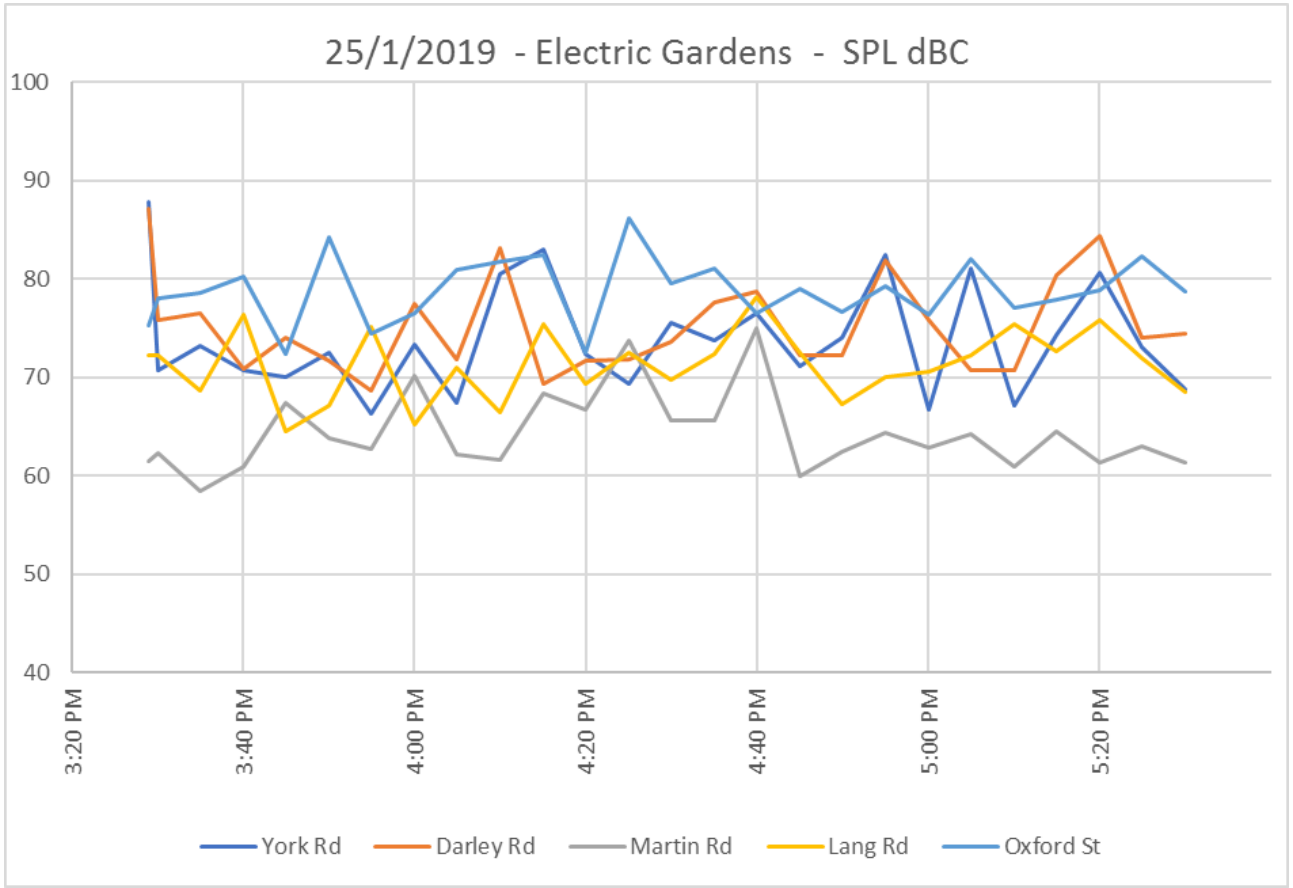
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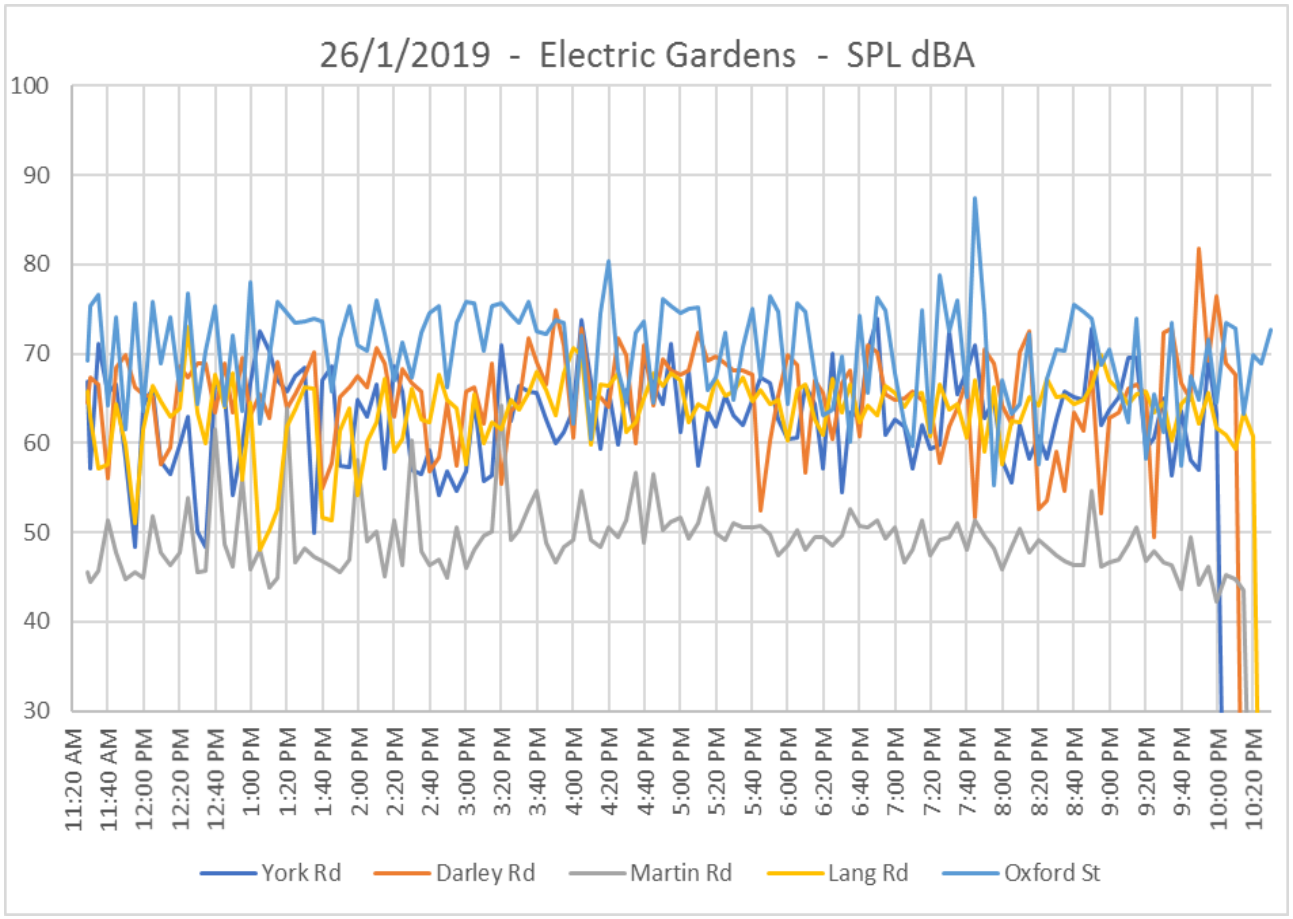
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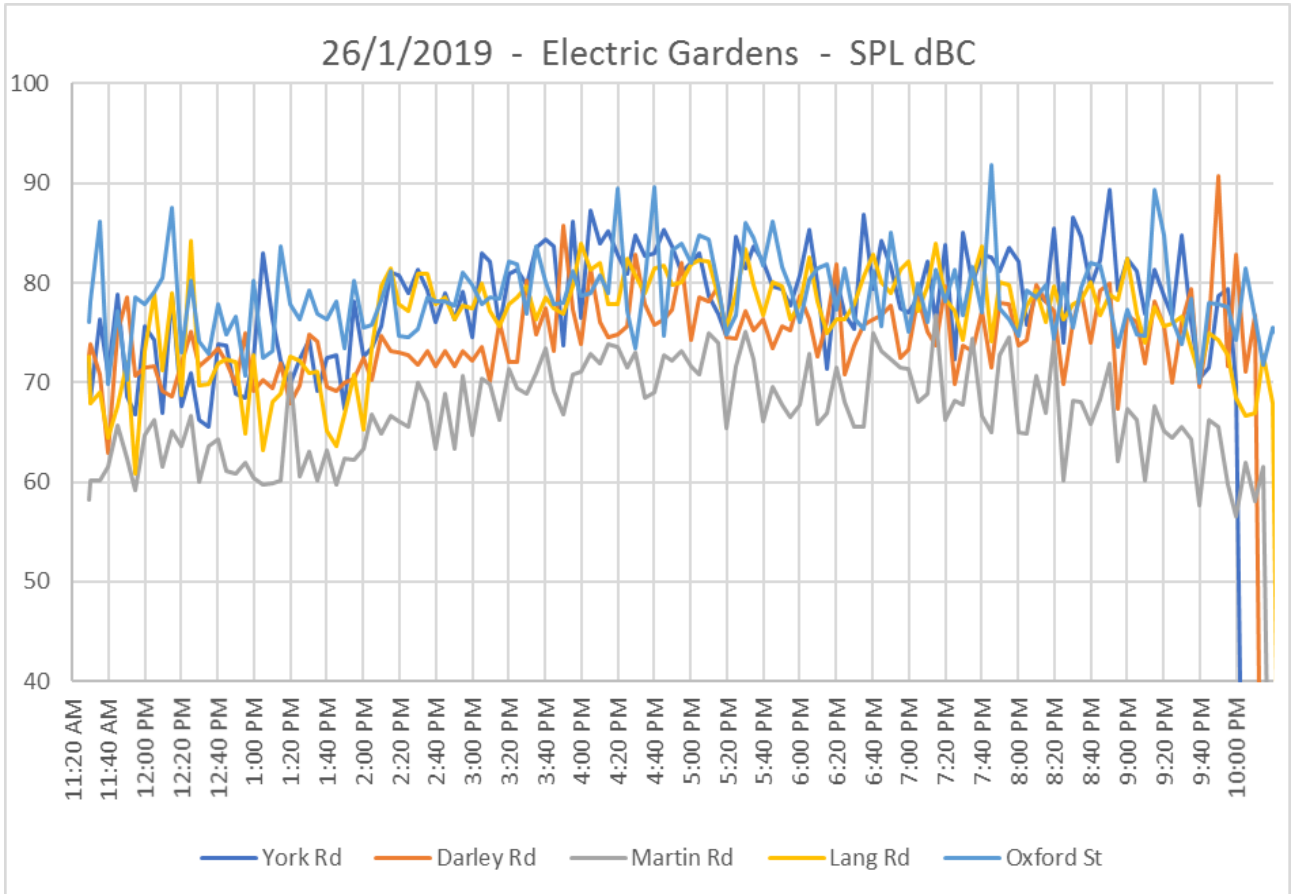
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F.2 Management Process for Exceedances

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 the result of the Electric Gardens 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.

G. Summary

Overall, we believe that the implementation of the SPL*net* system as part of the environmental noise management plan for Electric Gardens 2019 has improved the quality of noise management for the event and ensured overall compliance with the EPA Prevention Notice.