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Response to the EIS for the

Epping to Thornleigh Third Track Proposal

By the

Beecroft-Cheltenham Civic Trust Inc

Application SSI 5132

Date	4 November 2012
Issue No	A

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Introduction

The Beecroft-Cheltenham Civic Trust Inc ("the Trust") **objects** to the proposal for the Epping to Thornleigh Third Track project ("the project"). The Trust is of the opinion that the Environmental Impact Statement ("EIS") published in support of the project is deficient for the following reasons:

- It has not properly assessed the level of noise that will result from the project
- It has failed to consider the impact that noise and pollution will have on the health and wellbeing of residents
- The impact of the project on heritage and the fabric of the Beecroft Cheltenham Heritage Conservation Area ("BCHCA") appears to be ignored or downplayed
- There is no appraisal of the existing vegetation or landform along the entire rail corridor and its curtilage to ameliorate the visual impact of the proposed structures and built form
- There has been inadequate consideration of Aboriginal Heritage
- The reduction in road freight claimed in the proposal is unsubstantiated
- Impacts during construction have not been considered.

1. Noise

The Trust has commissioned a noise assessment of existing rail traffic on the Main Northern Line from Acoustic Logic Consultancy Pty Ltd, a company highly regarded in the field of acoustic assessment. A copy of the company's report is attached to this submission. The Trust adopts this report for the purposes of this submission.

The Trust has reviewed the EIS and the Technical Working Paper relating to noise and vibration which supports it, and has identified the following areas of concern:

- The noise increases contained in the summaries and conclusions are smaller than appear in Appendix C of the Working Paper and are therefore misleading. The source of the noise increases in the summaries is not explained. The summaries indicate that noise increases are generally within the NSW Interim Guideline for the Assessment of Noise from Rail Projects ("IGANRIP") trigger levels, whereas Appendix C of the Working Paper clearly indicates that they exceed those levels at most locations, notwithstanding that the increases may have been under-predicted.
- There are a number of anomalies in the noise modelling that lead to the conclusion that the noise levels have been under-predicted, particularly for locations adjacent to curves. These include: how the increase in rail freight volume is addressed, inconsistencies between how the EIS says the new track will be used and the modelling, train noise source levels, modelling heights to take in two-storey dwellings and calibration of the model to existing noise levels.
- The locations selected for detailed noise monitoring exclude locations affected by wheel squeal, and the number of locations used (four) is inadequate.
- The presentation of results is not in accordance with IGANRIP guidelines.
- A comparison of the 2026 position with and without the project has been made, but not in accordance with the IGANRIP guidelines. The guidelines require before and after opening, plus (typically) 10 years after opening to be assessed and compared.
- The assessment of airborne noise mitigation options is not site specific. It is so general that it could be applied to any assessment carried out in the State. It does not address the proposal specifically, and is highly dismissive of the

adoption of any noise control measures. The clear impression is that nothing will be done.

1.1 Prediction of Existing and Future Noise Levels

The issue of prediction of existing and future noise levels is a significant one, since the IGANRIP guidelines are written around "trigger" noise levels. According to the EIS, there are many cases where the L_{eq} trigger levels are only just below the 2 dB level. It would take only a small increase in the predicted noise due to increased rail traffic for the trigger to be exceeded in many more dwellings. There are three main issues related to the modelling:

- The way in which increases in traffic on the line have been handled
- Inconsistencies between the noise working paper (and the modelling contained in it) and the EIS
- The source noise levels used in the modelling, particularly in relation to wheel squeal.

1.2 Rail Traffic Growth

Rail traffic growth is important because it affects the L_{eq} predictions. The EIS says that rail freight traffic is increasing at 4% per year and may be greater due to efficiencies and costs. Doubling every 15 to 20 years is predicted (EIS, p.36) which corresponds to 4% annualised growth. Assuming this to mean total volume, then based on the freight movements and train lengths in the noise working paper (Table 17) the total volumes will vary as follows:

Year	Total train lengths	Annual increase
2011	22000	n/a
2016 (at opening)	28600	7.2% (2011 to 2016)
2026	53500	6.5% (2016 to 2026)
2026 (no build)	34000	1.7% (2016 to 2026)

A higher increase in traffic has been used prior to opening than after, which will tend to diminish the projected increase in noise following opening and therefore make the

project look more favourable. Although this effect is small (<0.5 dB to the L_{eq}) it may mean that locations taken to suffer an increase of less than 2 dB actually suffer an increase of more than 2 dB. The assumptions made in the EIS appear to over-predict the absolute levels of noise but tend to under-predict the increase in noise.

There is no way of knowing whether the existing number of movements cited is correct, as the technical paper does not directly correlate the number of freight noise events during the long-term measurements that were conducted. There has been a correlation of the modelled noise levels, but as the tolerance used is the same as the "change in noise" trigger level the figures quoted are no real indicator.

1.3 Train Lengths

Train length is an associated issue. On pp36-7 of the EIS it is said that one of the reasons for the proposed third track is that existing passing loops are too short, so that the length of trains is limited to 600m, whereas modern trains can be up to 1500m long. In contrast, the working paper uses two train lengths – 800m and 1500m – for the existing and post-build scenarios. Neither length appears possible on the existing track. This inconsistency will have an effect on the modelling, but the effect (up or down) will depend on exactly how the numbers of existing and future movements have been determined, which the EIS does not make clear. Longer trains using more locomotives may increase the L_{max} levels in areas not affected by wheel squeal. Longer trains also produce a higher L_{eq} because wagon generated noise is present for a longer period. Based on the note at the foot of Table 12 in the noise working paper it appears that all modelling has been done on the basis of an assumed single train with the same assumed (but unspecified) number of wagons. After completion of the project there will be both more and longer trains, but the EIS comparison between existing and future options, while taking into account the increased number of trains, does not consider the increase in train lengths. This causes an under-prediction of the noise increase, which will be higher close to the tight curves because wheel squeal makes the noise contribution from wagons relatively greater in these areas.

1.4 The Impact of Noise on Health and Wellbeing

In addition, while the IGANRIP guidelines look only at L_{max} noise levels in terms of the worst case, they do not take into account that the actual effect on sleep is related to both the level and the number of noise events, and that longer trains mean more wheel squeal events. There will also be a significant increase in the number of night rail

movements, so that the number of noise events contributing to a potential sleep awakening is increased. The Trust notes that its consultant's report identifies that existing rail traffic causes on average two to three sleep awakenings per night over and above one which is typical for the general population for reasons other than noise. The increase in rail movements that the project will generate can only cause an increase in the number of sleep awakenings per night.

Sleep disturbance is well established in the medical literature as a danger to health and well-being. The World Health Organisation recommends that it is especially important to limit the number of noise events exceeding 45 decibels for good sleep quality. The study indicates that this is likely to be exceeded at many locations along the rail corridor.

1.5 Use of Additional Track by Non-Freight Trains

The EIS indicates that the new track may be used by passenger trains. It appears that no modelling of this has been undertaken, as no mention of it is made in the noise working paper. Such use would have the effect of increasing noise L_{eq} noise levels for receivers on the western side of the track and lessening them for those on the eastern side. The increase on the western side is likely to be greater than the decrease on the eastern side.

1.6 Under-Prediction of Noise from Wheel Squeal

Section 4.6 of the noise working paper sets out that the measurements of noise emissions from a noise logger at 14 The Crescent indicate that train noise emission levels were higher than those generally recorded for "standard" noise source levels, whereas Table 18 in the paper indicates that the modelled noise level at Location 3 – 57 Wongala Crescent – was significantly lower than actually measured. These statements indicate that while the modelling includes an allowance for wheel squeal in the vicinity of tight curves, the effect has been under-predicted. Location 3 is not the most affected location as far as wheel squeal noise is concerned, and the under-prediction of noise levels is likely to be greater for the other locations identified.

The working paper acknowledges that the predictions in it are incorrect, but brushes this off in Section 4.8 by saying that this should be further examined "in the design stage". Even presuming that there will be a "design stage", this is not sufficient. While

the Trust accepts that the section of track through Beecroft and Cheltenham is not typical, as the curves in this area are very tight, wheel squeal in this area has been an ongoing issue for many years, and a problem that has not been solved despite many attempts. It is a major issue which, in the Trust's submission, needs to be addressed in the EIS rather than being swept aside in this way.

1.7 Noise Prediction to Two-Storey Dwellings

The noise working paper does not indicate the height above ground level at which noise predictions have been made. IGANRIP requires assessments to be made for ground and first floor levels of residential buildings. First floor noise levels are generally higher, as screening from embankments, etc., is reduced. There is no indication in the EIS that first floor noise levels have been taken into account.

1.8 Location for Noise Measurements and Predictions

The locations selected for the longer term noise measurements are not those that are, and will be, affected by wheel squeal. Those locations are:

- 32 Cambridge Street, Epping (slight curve)
- 20 The Crescent, Cheltenham (straight track)
- 57 Wongala Crescent, Beecroft (just after/before the start of a tight curve)
- 16 Yarrara Road, Pennant Hills (straight track).

None of these locations are on a tightly curved section of track. Given the history of complaints by residents of Beecroft and Cheltenham it would have been appropriate to include a noise monitor location that addressed the concerns that they have raised (as indeed was done by the Trust's consultant). Noise from wheel squeal is site specific, and specific long term monitoring from such a location would have been undertaken to quantify it. Instead, the modelling used generalised numbers rather than actual site data.

None of the locations selected would enable the correct data to be collected over the long term. The Trust notes that there was one location where better data was collected during short term monitoring and showed higher than expected levels, but that this data was dismissed as being unreliable due to the short term nature of the measurements.

1.9 Compliance with IGANRIP Assessment Procedure

The working paper does not fulfil the requirements of the IGANRIP in a number of areas:

- The contributions from freight and passenger movements have not been separated out. This tends to "soften" the increase in noise as the more significant increase in freight noise is lessened.
- No detailed modelling of the effect of mitigation measures has been undertaken.
- The IGANRIP requires noise increases to be assessed at opening and at a reasonable time after opening – say 10 years. There is no requirement in IGANRIP to assess the 10 years after opening with and without the proposal, which is done in the working paper in an attempt to lessen the apparent impact of the proposal.

1.10 Applicability of Standard IGANRIP Noise Levels

Standard IGANRIP assessment criteria have been derived for more typical situations on the network. These more standard situations involve either primarily suburban or at least a mix of passenger and freight movements. Where there is a predominance of freight movements the locomotive is the primary source of noise with the wagons having lower noise levels.

This is not the case through Beecroft and Cheltenham. Because of the tight track curves and the fact that at night the track is effectively a freight line, it does not fall into a standard situation. As the working paper acknowledges, wheel squeal causes noise events as the wagons are passing that are regular, high level and short duration. For a train of 1500m in length, this means that residents would have to endure around two minutes of intermittent, random wheel squeals which are much louder than the locomotive. This is very different from a typical situation where the locomotive passes and the wagons follow at a reduced noise level. The EIS does not take this into account.

1.11 Presentation of Noise Levels and Predictions

The graphs in Appendix B are misleading, as they do not show the L_{max} noise levels. They show 15 minute noise levels, with the L_1 descriptor. As the 1% level for 15

minutes corresponds to 9 seconds, this effectively excludes the loudest 9 seconds of noise recordings. Because the IGANRIP criteria include L_{max} levels, the presentation does not allow scrutiny of the results as the method of presentation effectively "hides" the L_{max} events.

Appendix F summarises noise levels at receivers. The two residential receivers selected are not those that would be most affected by noise – there are receivers further north in The Crescent that are clearly more noise affected than is No 94 The Crescent; 22 Cheltenham Road is at the deepest point of a cutting and therefore receives less noise than other houses.

The presentation of the noise contour maps is misleading. It appears that the contours take into account screening from existing structures. While this is acceptable, it leads to a situation where the contours wrap in front of buildings close to the railway. This gives the impression of the lower noise contour passing in front of the building whereas in reality the façade is subject to a higher noise level. There is known to be significant impact from rail freight noise in dwellings at distances greater than 50 metres from the railway line.

Only the contours for the 2026 "with" proposal scenario are presented, which does not allow scrutiny of other scenarios, such as "prior to opening".

1.12 Airborne Noise Mitigation

Table 3.3 in the EIS indicates that it proposes a number of methods for noise mitigation, and that these will be determined during "detailed design". It confirms that existing noise levels are not within the scope of the EIS, but notes the NSW Government's commitment to a comprehensive approach to "managing (existing) impacts ... to address acute levels of rail noise". The EIS also states that "ongoing research" is being carried out, without specifying how long the research has been going on, how well it is funded, or what results (if any) have been achieved. The Trust is concerned that this research is being used as another justification for doing nothing – "let's wait and see what the research turns up; to do anything before then would be premature".

The working paper's assessment of airborne noise mitigation options undertaken is not site specific. Indeed, it is so general that it could be applied to any assessment carried out in the State. It does not specifically address the proposal, and is highly dismissive in the adoption of any noise control measures. The clear impression conveyed to the Trust is that nothing will be done.

The Trust understands that one of the proposed mitigation measures (track lubrication) has been trialled without success. Given that the trial may well have been conducted by the authors of the working paper, or that at least the authors had knowledge of the results, the Trust finds it odd that the measure would have been put forward on the basis that it is "likely" to result in substantial noise reductions.

The Trust accepts that noise barriers can reduce rail noise. However, unless properly designed and installed they can have significant negative visual effects, in terms of appearance and the resultant graffiti they attract. Graffiti is a substantial problem.

2.Other Health Issues

The EIS fails to address the health implications of pollution resulting from the project. In particular, it does not address the emission of diesel particulate matter, a well known carcinogen, from locomotives. The escape of coal dust from uncovered coal wagons is an industry wide problem. This results in serious lung damage as well as corrosion of the tracks. similarly the escape of abrasive metal dust from brake linings has not been considered. These emissions must be measured within the project corridor.

The high social cost of the project has not been considered.

3. Impact of the Project on Heritage

The points made in this section are underpinned in detail in the submission by the Beecroft Cheltenham History Group *"Response to the Historic Cultural Heritage Assessment commissioned for the Northern Sydney Freight Corridor: Epping to Thornleigh Third Track Project."* This assessment dated September 2012 was undertaken by Artefact Heritage[1]". The Group's response fully addresses concerns which are not addressed in the EIS. A more detailed and comprehensive study of the identified heritage issues undertaken by a qualified historic heritage specialist is required in the EIS to allow an informed approval process. The existing assessment failed to consider the cumulative impact of the proposed infrastructure project (missing the big picture) and is not sympathetic to the significant heritage fabric that is the Beecroft and Cheltenham Heritage Conservation Area.

The failure to consider heritage in an appropriate manner is concerning as it underscores a troubling recurrent theme of EIS: downplaying impact assessments by failing to fully investigate the issues.

The whole of the rail reserve passing through Beecroft and Cheltenham is part of the Beecroft Cheltenham Heritage Conservation Area ("BCHCA"). This reality appears to have been totally ignored. Any changes proposed in the railway corridor must be assessed in relation to Hornsby Council's local classification of the BCHCA. The EIS should state that consultation with the Beecroft Cheltenham Civic Trust is advisable.

The Trust is particularly concerned about the project's impact in the following areas:

3.1 Cheltenham Station

The project proposes the construction of a two storey railway concourse, 13m high, on the site of the existing station. It will have lift and stair access to all platforms, a bus bay and a taxi rank. The scale and location of this indicative structure relative to the natural topography is totally inappropriate for a heritage conservation area. It appears that no effort has been made to design or site a railway station that is sympathetic to the local

[1] The report was accessed in September 2012 from http://majorprojects.planning.nsw.gov,au/index.pl?action=view_job&job_id=5132

environment. The EIS should state that a heritage study and impact statement is necessary in order to determine an appropriate location and design within the BCHCA. Ideally the impact assessment of the proposed railway station should be undertaken as part of the EIS prior to project approval to ensure a viable and sympathetic outcome.

The EIS expresses the view that the concourse structure proposed for Cheltenham is "unlikely to have significant impact on the heritage values" of the houses opposite, mainly because some of them will be screened by vegetation. The Trust disputes this view, and considers that the structure will almost certainly have significant adverse impact on those houses and the area generally. The EIS must require a landscape and arboricultural study and assessment and the submission of a landscape design solution within the railway corridor and its curtilage to minimise the visual impact of the proposed built form which should form part of the overall infrastructure planning.

The Trust notes that in Table 3.3 the EIS proposes that "(a) group made up of nominated directly affected residents at Cheltenham will be established during detailed design to seek feedback on options for building treatments, landscape and visual elements of Cheltenham Station". The Trust should be represented on that group. In this regard it should be noted that the Trust has available to it professional expertise in the areas of architecture, landscape architecture and arboriculture.

3.1.1 The Car Park at Cheltenham

The existing car park on the western side of the station will be subsumed by the new track. Its replacement will extend from the southern end of the existing Down platform almost to Lyne Road. This will increase walking distance to the station, which will be an issue for the infirm, and impact on the Cheltenham Recreation Club. There will also be significant impact on the availability of parking in The Crescent adjacent to the station.

3.2 Beecroft Station Precinct

Beecroft Railway Station precinct comprises not only the station but also the neighbouring parkland, children's playground and the heritage plantings. On the Beecroft Station there are two different sites. The first is the remnant siding which will be removed. It is between the current station and the playground. It is clearly visible from the station and contains a pine tree (visible from the playground) that does not seem to be mentioned in the EIS. This dates from late 19th Century. The second is the original station which was south of Copeland Road bridge. This historic original

platform, built in 1895 and in use from the commencement of rail services to the area in 1896, is to be removed. It represents the earliest piece of rail infrastructure in Beecroft. The EIS largely seems to talk of the siding rather than the original station.

These historic remnant structures must be measured, photographed, documented and recorded for future archival purposes. This must be undertaken by a recognised heritage consultant.

3.2.1 The Pedestrian Subway

Extension of the existing pedestrian subway at the station under the third track should be completed in a manner sympathetic to the heritage status of the existing station.

There is no plan to install lifts or other facilities to permit much needed access to the station for people with disabilities, despite considerable public pressure for those facilities over a number of years.

3.2.2 Impact on Garden Area and Playground

The EIS states that earthworks for the new track will result in partial removal of the existing garden and children's playground on Wongala Crescent and the removal of at least two of the historic Bunya pines. Detailed survey work of the existing natural features, amenities and topography is required.

The EIS makes no evaluation of the type of engineering structures, arboricultural and landscape assessments to minimise the impact on the existing area. The EIS must require analysis, survey, geotechnical investigation and suitable engineering structures to minimise impact and avoid removal of heritage plantings, including Bunya pines. Any finishes and engineering structures shall be consistent with the fabric of the BCHCA. The EIS should require a detailed landscape plan for the garden and playground area which will provide a visual buffer from the railway corridor.

3.2.3 The Car Park at Beecroft

The EIS indicates that the car park on the western side of the station will be extended to compensate for the parking spaces in the present car park to be taken for the new track. The EIS needs to substantiate this statement by undertaking a study by a qualified traffic consultant.

This car park will have great visual impact on the BCHCA due to the loss of trees. It must be noted that the affected area contains remnant Blue Gum High Forest.

3.3 The Railway Corridor

The EIS claims that houses in Wongala Crescent, The Crescent, Sutherland Road, and in other nearby streets, "will not be impacted because they are screened by vegetation". It relies on vegetation to lessen the impact on heritage houses and the BCHCA generally. At the same time, the project will deplete vegetation along the rail corridor, which will have a significant detrimental impact on the amenity of residents adjacent to the rail corridor.

A full landscape appraisal of the entire length of the section of the project located within the BCHCA is required. This must include existing vegetation, landform, structures and built form. A vegetation buffer must be established within the rail corridor and its curtilage so as to ameliorate the visual impact of the project. Any noise mitigation structures must be included in this landscape appraisal.

3.4 The Village Green and Related Facilities

The EIS fails to identify the extent to which the project will impact on these important community facilities. It needs to address the extent to which the project will have an impact on existing vegetation, drainage, noise and other factors. A management and landscape plan are necessary to protect these valuable community assets.

3.5 Convict built stone causeway, Devlins Creek

The EIS fails fully to assess the significance and potential impact on the convict built stone causeway at Devlins Creek. Further archaeological assessment by a suitably qualified archaeologist should be required as part of the EIS not post approval. The results of this assessment would then allow an informed approval process with specific and grounded management strategies. It is not possible to ensure the project avoids impacting this significant item unless the causeway is fully identified.

3.6 Aboriginal Heritage

There has been an inadequate consideration of Aboriginal heritage within the EIS.

The Aboriginal cultural heritage assessment for the EIS found no Aboriginal sites within the study area being 50m either side of the rail corridor. This finding is incorrect. A search of the Aboriginal heritage information management system identified one registered site (45-6-3067) located within the impact area of the proposed Cheltenham station carpark. As this site will be impacted by the proposal it should be included within the EIS.

An impact to Aboriginal heritage also requires Aboriginal stakeholders to be consulted.

Clearly the site survey was inadequate and it is recommended that a suitable experienced archaeologist undertake a new survey of the study area to allow an informed approval process. Certainty regarding the impact to Aboriginal heritage can only be obtained through a full and complete assessment.

4. Impacts during Construction Phase

It is estimated that the project will commence in 2013 and be completed in 2016. The EIS fails to address the impact that construction within an already busy rail corridor and adjacent areas will have on the community. This includes:

- Noise impacts on residents and rail workers
- Disruption to rail services
- Heavy vehicle movements
- Hours of work
- Parking for construction workers and commuters
- Location of work depots
- Changes resulting from work needed at Cheltenham Station and the Cheltenham Road bridge.

5. Impacts on Road Freight

Claims in the EIS that the project will reduce road freight are not substantiated. Such claims take no account of the different nature of the product being transported. As total rail freight increases, it is inevitable that road freight will also increase.

This is confirmed by a study published in support of the F3 – Sydney Orbital Link proposal which states that "rail is unlikely to meet the future inter-regional transport task even if major rail infrastructure upgrades occur" (SKM report *F3 to Sydney Orbital Link Study*, April 2004).

The EIS for the project must address the statements relating to rail infrastructure improvements made in this report.

6. Alternative Options

It is well recognised that the project will be constructed on one of the steepest grades in the rail network and along a curves alignment built in 19th Century. This alignment is not suitable for current diesel locomotives and trains up to 1500 metres long. It is inefficient in both fuel consumption and time.

The EIS noted that several alternative options were considered. It rejected a tunnel from Epping to Hawkesbury River on the grounds that only two trains could run in an hour. This is equivalent to 48 freight train movements a day, more that the 41 proposed for the project. The advantages in terms of a better alignment and time savings were noted. This alternative should be reassessed.

The EIS should consider the option of a freight rail tunnel from Epping to Hornsby.

It should also consider imposing strict controls on locomotives in terms of noise and pollution, and forcing operators to upgrade their rolling stock. Modern powerful and efficient locomotives could avoid the need for the project. The Minister for Roads recently announced that truck operators must upgrade their vehicles to reduce pollution in the M5 East tunnel – there appears to be no reason why similar requirements should not be imposed on freight train operators on the Main North line.

The EIS acknowledges that the project is a short term solution. The only long term solution is an immediate start to planning and building an outer Sydney road link between the M7 in the vicinity of Dean Park and the F 3 north of the Hawkesbury River involving a second bridge over the River. The need for such a link was recognised by the Hon Marla Pearlman in her report on the proposed tunnel between the F3 and the M2. The link should incorporate a rail line with grades and curves appropriate for a modern high speed freight operation, creating greater efficiency. Funds allocated to the F3 to M2 tunnel and for the project could be combined to start this as a real solution to existing road and rail freight problems.

Conclusion

The community of Beecroft and Cheltenham is outraged at this project and the poor quality of the EIS. The Trust has noted many deficiencies in the EIS. It seems to have been prepared to a minimum standard to support a predetermined outcome. There is no protection for the community or its health and wellbeing, and too little regard for our heritage.

There has been no community consultation; the community information sessions have served only to tell us what has been decided and not to seek our views. Despite the planning for the project having been undertaken for some 8 years, the community was not notified until early in 2012. The Trust has operated for nearly 50 years yet, although our organisation is known to the project planners, no attempt has been made to consult with us or to involve us in the process.

There has been no cost benefit analysis to justify the project on economic grounds and no consideration of the social costs of the project.

The Trust requests that a formal response be provided for each section and detailed responses to individual issues within each section contained in this submission. In particular, the Trust requests that the following issues be addressed:

- Noise – Inconsistencies between EIS and Appendix C of Working Paper
- Noise – Under-prediction of noise and anomalies in noise prediction
- Noise – Inappropriate selection of noise monitoring sites
- Noise – Presentation of results not in accordance with IGANRIP guidelines
- Noise – Scenario comparisons not in accordance with IGANRIP guidelines
- Noise - Lack of site specificity in assessment of airborne noise mitigation options
- Other health issues – failure to address health implications and high social cost of the project
- Aboriginal heritage – Failure to consider impact on site 45-6-3067

- Aboriginal heritage – Failure to consult with Aboriginal Stakeholders in regard to impact on site 45-6-3067
- Historic heritage – Failure to consider cumulative impact of the proposal on the heritage fabric of the BCHCA
- Historic heritage – Failure to consider location and design of the proposed Cheltenham station on the BCHCA
- Construction impacts – Failure to consider noise impacts, disruption to services, heavy vehicle movements, limitations on hours of work, effect on parking, location of work depots and changes resulting from proposed work at and around Cheltenham station
- Impacts on road freight – No substantiation of claims that the project will reduce road freight
- Consideration of alternatives – No proper consideration of alternative routes or solutions

In short, the EIS lacks equity and integrity. The community has been asked to bear a disproportionate share of the project which has not been properly justified.

Michael Stove

President

4 November 2012

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1 INTRODUCTION

Acoustic Logic Consultancy have been engaged by the Beecroft Cheltenham Civic Trust ("Trust") to provide advice to them regarding noise issues surrounding the proposed amplification of freight operations on the main northern line.

The Trust's concern's are:

- Residents along the rail corridor already experience a significant loss of amenity due to noise from existing movements on the line, particularly at night.
- Most of the residential development along the corridor occurred some time ago when it was not common practice to mitigate rail noise emissions, nor treat dwellings.
- Development and amplification of railway operations have proceeded without regard to modern standards of noise abatement. Increases in noise (and future increase) are justified on the basis that the railway is an existing source and these incremental increases do not significantly alter the current situation.
- The proposed amplification will further erode the amenity of the residential receivers already impacted by rail operations.

In response to these concerns, Acoustic Logic has undertaken an assessment of noise impacts from existing rail operations at a residence adjacent to the railway. Long term measurements of noise levels were made, and the data have been analysed and compared to existing NSW and other indicators used to assess noise impacts.

2 NOISE MEASURMENTS

Measurements of railway noise were conducted using an unattended noise monitor placed in the front yard of 92A Sutherland Road, Beecroft. The location of the monitor is shown in Figures 1 and 2. The monitoring period was 30th July 2012 to the 7th August 2012.

The monitor used was an Acoustic Research Laboratories Ngara noise monitor which retains factory calibration. The monitor also records uncompressed audio files that can be post-analysed to identify noise sources and determine statistical descriptors for various time and frequency weightings, and narrow band analysis.

The monitor is a type 1 instrument and was field calibrated at the commencement and completion of the measurement period with no significant drift being noted.

When determining the noise levels at the residential façade the following was considered:

The monitor was located closer to the railway than the dwelling. The additional distance attenuation was estimated as 0.6 dB(A) for instantaneous levels and 0.3 dB(A) for energy averaged (L_{eq})noise levels.

As the monitor was located near a fence, reflections from this fence back to the monitoring location would occur, similar to the reflection caused by a typical residential façade. This is a conservative assumption as the façade would be a stronger reflecting element.

At façade noise levels have been determined by using the data collected uncorrected, given that the small correction for additional distance would be cancelled by not correcting for the strength of reflections.

Weather conditions during the monitoring period were generally fine with light winds that would not have any significant impact on the noise levels monitored, especially considering the small source to receiver distances do not permit significant changes in noise propagation with distance.

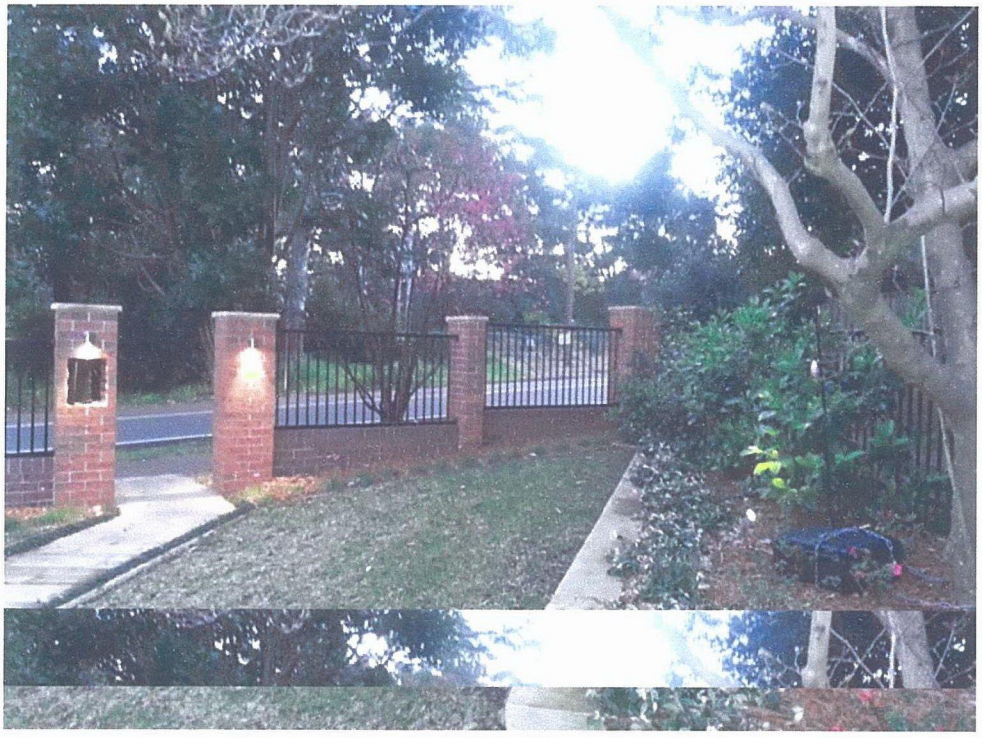


Figure 1 – Noise Monitor

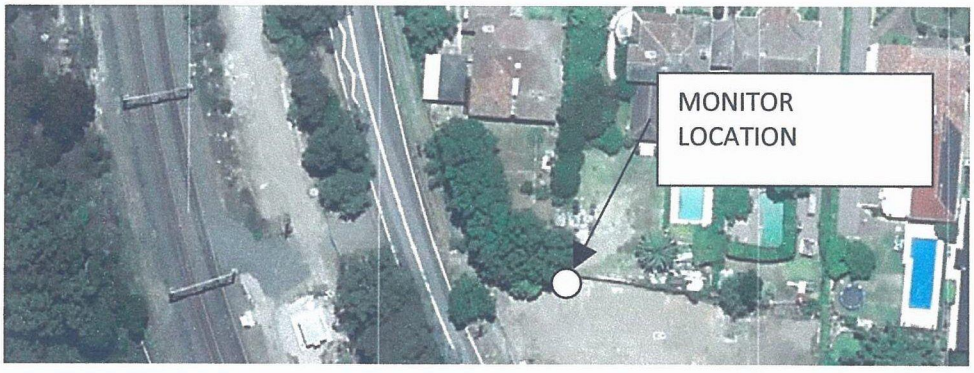


Figure 2 – Noise Monitor Location (Source: Google Maps)

3 ENVIRONMENTAL NOISE DESCRIPTORS

Environmental noise constantly varies. Accordingly, it is not possible to accurately determine prevailing environmental noise conditions by measuring a single, instantaneous noise level.

A measurement interval is generally utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine appropriate noise description parameters.

Two principle measurement parameters are used to characterise railway noise - L_{eq} and. L_{max}.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the 15 minute period. L_{eq} is important in the assessment of environmental noise impact as it closely corresponds with the way human hearing averages noise in a changing noise environment.

The $L_{1,\ 1\ min}$ parameter (or the noise level exceeded for 1% of the time) or the L_{max} parameter (the highest noise level recorded) are used during the night period to assess potential sleep arousal and annoyance effects due to transient noise sources, such as rail movements.

The L_{eq} takes into account the number and noise level for the noise events in the period giving a cumulative average noise level of all these events.

The L_{max} is noise level produced by the loudest train, at the loudest point during the passby.

4 MONITORING RESULTS

Measured 15 minute statistical noise levels are provided in Appendix 1. Also provided in Appendix 1 are charts of the measured $L_{1\ (1\ minute)}$ noise levels.

The monitored noise levels also include other non-railway ambient noise sources, typically intermittent traffic on Sutherland Road. In order to exclude these events, samples of the audio recordings were played back and the typical level of railway movements (suburban and freight) and road traffic were determined. Traffic noise events typically generated maximum noise levels of less than 71dB(A). Typically suburban trains passbys exceeded 71dB(A), but produced noise levels less than 80 dB(A), and freight movement typically exceeded 80dB(A). Non-typical events were also played back to confirm these were railway related. Using this information, noise events not attributable to rail operations were filtered into non-railway events, suburban train movements and freight movements when determining railway noise levels.

The following tables summarise the statistical noise levels determined for railway noise.

Table 1 – Calculated Noise Descriptors

Date	Suburban		Freight		Combined		
	Day L_{Aeq} (7am to 10pm)	Night L_{Aeq} (7pm to 7am)	Day L_{Aeq} (7am to 10pm)	Night L_{Aeq} (7pm to 7am)	Day L_{Aeq} (7am to 10pm)	Night L_{Aeq} (7am to 10pm)	L_{max} (Fast)
MON 30/7	54	53	53	57	57	58	98
TUES 31/7	56	51	55	57	59	58	88
WEDS 1/8	57	49	58	60	60	61	93
THUR 2/8	56	53	57	58	60	59	97
FRI 3/8	55	50	58	56	60	57	93
SAT 4/8	56	52	55	53	58	56	96
SUN 5/8	55	50	54	58	58	59	91
MON 6/8	55	51	54	57	57	58	100

5 NOISE ASSESSMENT

5.1 NSW INTERIM GUIDELINE FOR THE ASSESSMENT OF NOISE FROM RAIL INFRASTRUCTURE PROJECTS (IGARIP)

This guideline was written by the Department of Planning and the Department of the Environment and Climate Change (now the Environment Protection Authority) (2007). The guideline states that "the interim guideline is designed to ensure that potential impacts associated with the ongoing expansion of rail developments are assessed in a consistent and transparent manner." The interim guideline was supposed to be reviewed after 3 years of operation however this has not yet occurred.

Under the policy noise from a proposed rail infrastructure project exceeding certain trigger levels initiate a process of assessment. The process of assessment includes:

- An assessment of noise and vibration values applicable to the project.
- Determination, assessment and prioritisation of "feasible and reasonable" mitigation methods and an identification of achievable noise and vibration goals after these measures have been applied.
- Community consultation.

The trigger levels are shown in Figure 1 below which is extracted from the IGARIP.

Table 1: Airborne rail traffic noise trigger levels for residential land uses

<table>
<tr><th rowspan="2">Type of development</th><th colspan="2">Noise trigger levels dB(A)</th><th rowspan="2">Comment</th></tr>
<tr><th>Day
(7 am–10 pm)</th><th>Night
(10 pm–7 am)</th></tr>
<tr><td rowspan="2">New rail line development</td><td colspan="2">Development increases existing rail noise levels
and
resulting rail noise levels exceed:</td><td rowspan="3">These numbers represent external levels of noise that trigger the need for an assessment of the potential noise impacts from a rail infrastructure project.
An 'increase' in existing rail noise levels is taken to be an increase of 2 dB(A) or more in L_{Aeq} in any hour or an increase of 3 dB(A) or more in L_{Amax}.</td></tr>
<tr><td>60 $L_{Aeq(15h)}$
80 L_{Amax}</td><td>55 $L_{Aeq(9h)}$
80 L_{Amax}</td></tr>
<tr><td rowspan="2">Redevelopment of existing rail line</td><td colspan="2">Development increases existing rail noise levels
and
resulting rail noise levels exceed:</td></tr>
<tr><td>65 $L_{Aeq(15h)}$
85 L_{Amax}</td><td>60 $L_{Aeq(9h)}$
85 L_{Amax}</td><td></td></tr>
</table>

Figure 1 – Noise Assessment Trigger Levels

It is noted that the approach taken in the IGARIP requires that both conditions are required to be satisfied – that is it needs to be shown that noise levels will exceed the trigger levels nominated, plus there needs to be an expected increase in noise must exceed 2 dB(A) for the L_{eq} and 3 dB(A) for the L_{max}.

This is in addition to making the trigger levels 5 dB higher for existing situations.

The practical effect of the approach is to allow a long term incremental increase in noise, notwithstanding that noise levels may already be high.

Increases in the L_{max} noise level could be the result of moving or adding additional tracks closer to residences, or introducing louder trains. For the L_{eq} descriptor, increasing the frequency of movements will also produce increases in level. An approximate 60 % increase in rail traffic (with all other factors staying the same) will result in a 2 dB(A) increase in L_{eq} .

Comparison between the trigger levels in Figure 1 and the measured noise levels in Table 1 indicates that the existing noise exposure is generally below the trigger levels for the L_{eq} descriptor (i.e. less than 65 dB(A) day and 60 dB(A) night) but the L_{max} trigger (85dB(A) L_{max} is significantly and consistently exceeded.

It is noted that the EIS currently on exhibition indicates that some locations along the study length exceed the trigger levels in both absolute and noise increase terms, others do not. This is primarily due to the study assuming that:

- There will be an increase in freight traffic prior to the opening of the third track, and then no growth thereafter.
- That there will be an almost complete phase out of the noisier K-set passenger train sets prior to 2016.

Both these factors tend to mask the real noise increase that will occur from freight movements and it is clear that if different assumptions were used regarding movement growth significantly greater areas would have exceeded the trigger levels.

5.2 ASSESSMENT OF SLEEP AROUSAL FROM EXISTING MOVEMENTS

At night, the primary impact of rail noise events is their effect on sleep. The probability of an awakening from an individual event is a function of the maximum noise level of that event. The cumulative probability of an awakening occurring during the night can be obtained by summing the individual event probabilities over a night.

Figure M1 in EPA Environmental Criteria for Road Traffic Noise (1999) summarises the measured probability of an awakening occurring for transportation noise sources from a number of studies.

The probability of night time awakenings have been calculated from the measured noise data for a residence with open windows (using an outside to inside noise reduction of 10 dB(A)).

Table 2 – Prediction of Night Time Awakenings from Rail Movements

Date	Probability of a Night Time Awakening
MON 30/7	3.1
TUES 31/7	2.1
WEDS 1/8	2.7
THUR 2/8	2.1
FRI 3/8	2.1
SAT 4/8	1.8
SUN 5/8	2.4
MON 6/8	2.5

It is noted that a typical average number of awakenings for the general population is around 1 awakening for reasons other than noise.

The analysis indicated that existing rail movements would cause approximately 2-3 awakenings during a typical night, which indicates noise exposure has a significant adverse impact on sleep.

Consequently, it would be expected that, adjacent to Northern Line, the typical resident would awaken 3-4 times during the night period.

Any increase in the number of movements (suburban or freight) would further increase the number of awakenings.

6 CONCLUSION

The measurements and analysis undertaken indicates noise impacts from existing rail movements have a significant adverse impact on the acoustic amenity of the residences near the railway.

The main impact is at night. Existing railway movements would typically cause around 2-3 awakenings per night, whereas the typical number of awakenings at night for the general population for reasons other than noise is around 1 awakening.

Given residence adjacent to the railway would typically expect to wake around every 2 hours during the night, the adverse effect on sleep is significant.

The proposed amplification should be assessed on this basis, with any increase adding to an already unacceptable situation.

The NSW Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (IGARIP) provides a methodology that "discounts" existing noise impacts. Notwithstanding this, the existing noise levels exceed the required trigger levels that would initiate a process of assessment **provided the proposed amplification leads to further increases of 2 dB(A) for L_{eq} levels and 3 dB(A) in L_{max} levels from the proposal are expected.**

It is noted that the EIS currently on exhibition indicates that some locations along the study length exceed the noise increase trigger levels in both absolute and noise increase terms. However, the predicted number of affected receivers would have been much larger if the assumptions made in the EIS had not tended to skew the results into showing a smaller increase.

This being the case, the process of assessment under the IGARIP includes:

- An assessment of noise and vibration values applicable to the project.
- Determination, assessment and prioritisation of "feasible and reasonable" mitigation methods and an identification of achievable noise and vibration goals after these measures have been applied.
- Community consultation.

In our view this should involve:

- Examining the feasibility of a purpose built freight line that would be more operationally more efficient as can be routed and designed to minimise noise impacts.
- If the existing alignment is retained acoustic barriers should be included in any proposal not just to meet minimum standards, but to minimise noise impacts to the extent that is reasonably feasible.

We trust this information is satisfactory. Please contact us should you have any further queries.

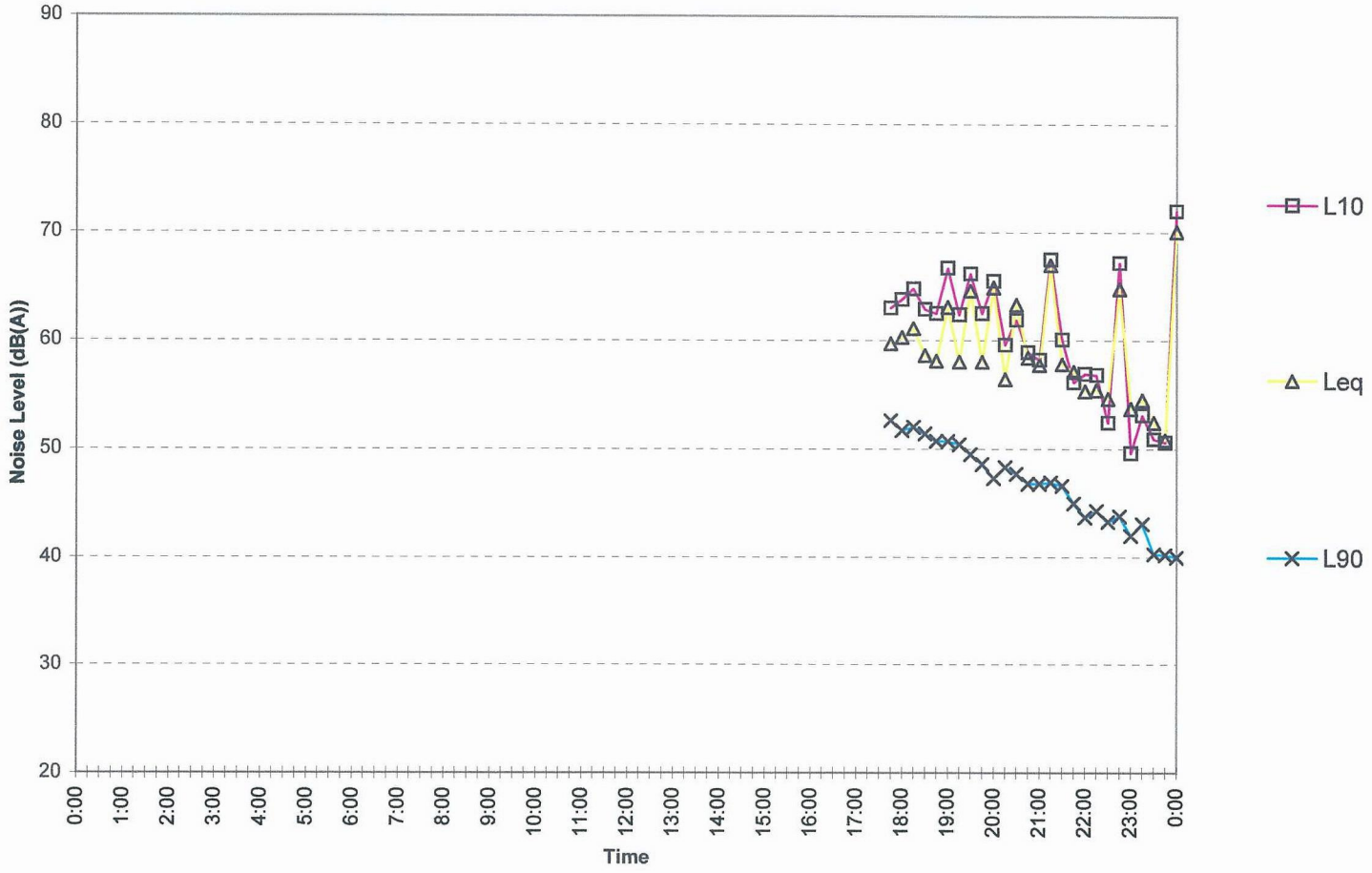
Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
Victor Fattoretto

APPENDIX 1 – MONITORING RESULTS AND DATA

92A Sutherland Road, Beecroft

Monday July 30,2012



Beecroft_15min_Data

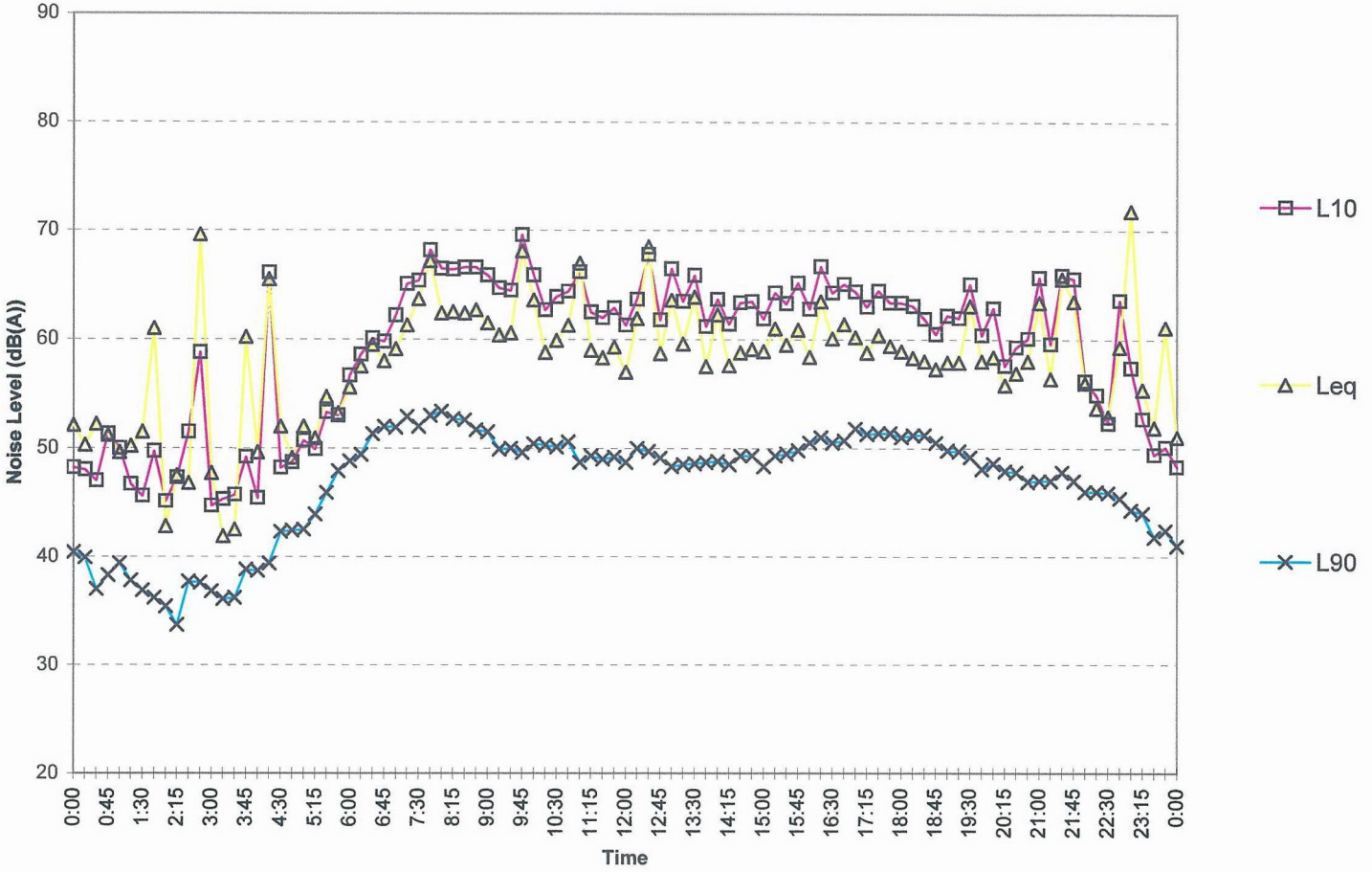
92A Sutherland Road, Beecroft

Tuesday July 31,2012

Beecroft_15min_Data

92A Sutherland Road, Beecroft

Wednesday August 1,2012



Beecroft_15min_Data

92A Sutherland Road, Beecroft

Thursday August 2,2012

Beecroft_15min_Data

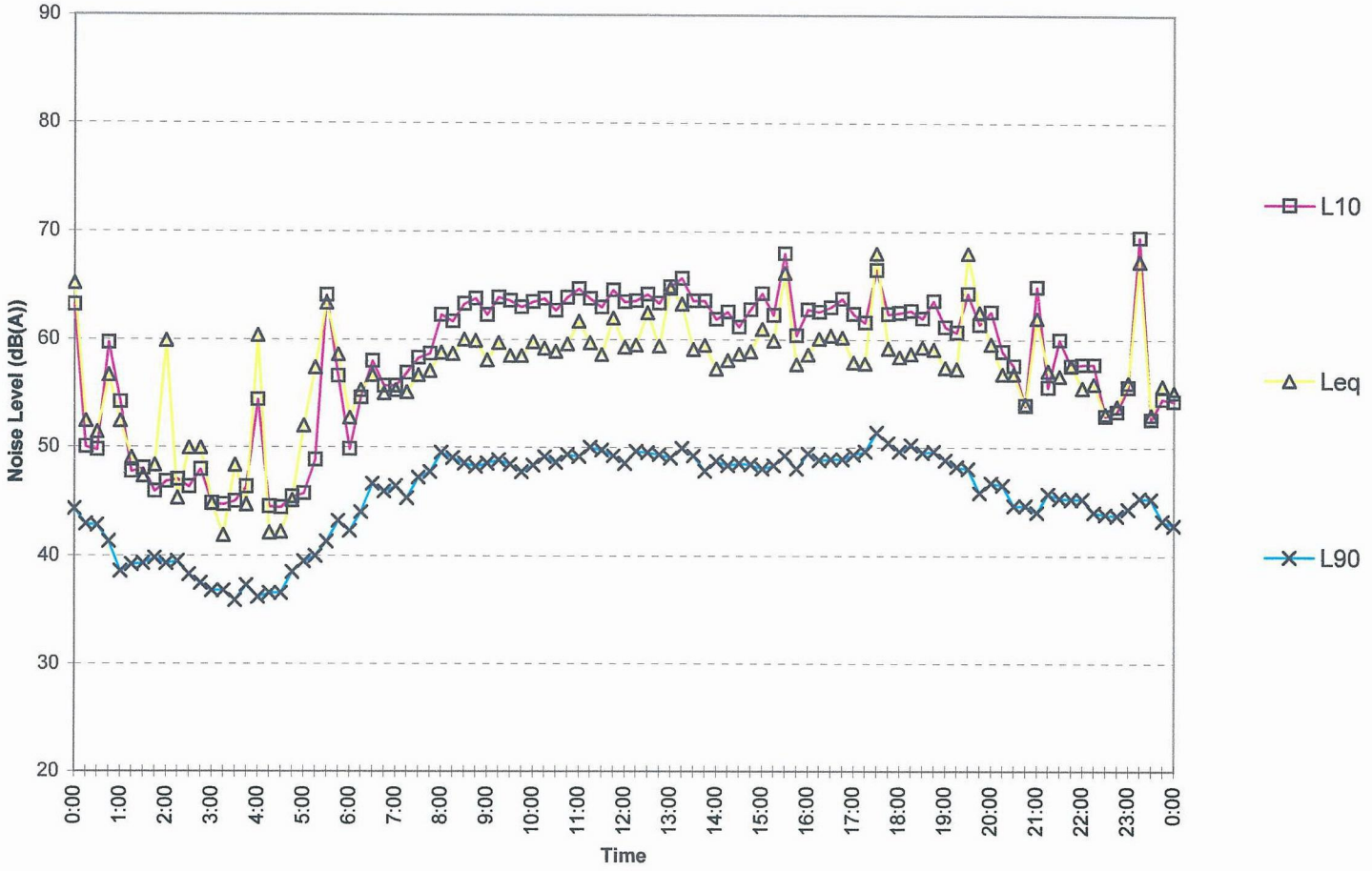
92A Sutherland Road, Beecroft

Friday August 3,2012

Beecroft_15min_Data

92A Sutherland Road, Beecroft

Saturday August 4,2012



Beecroft_15min_Data

92A Sutherland Road, Beecroft

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Beecroft_15min_Data

92A Sutherland Road, Beecroft

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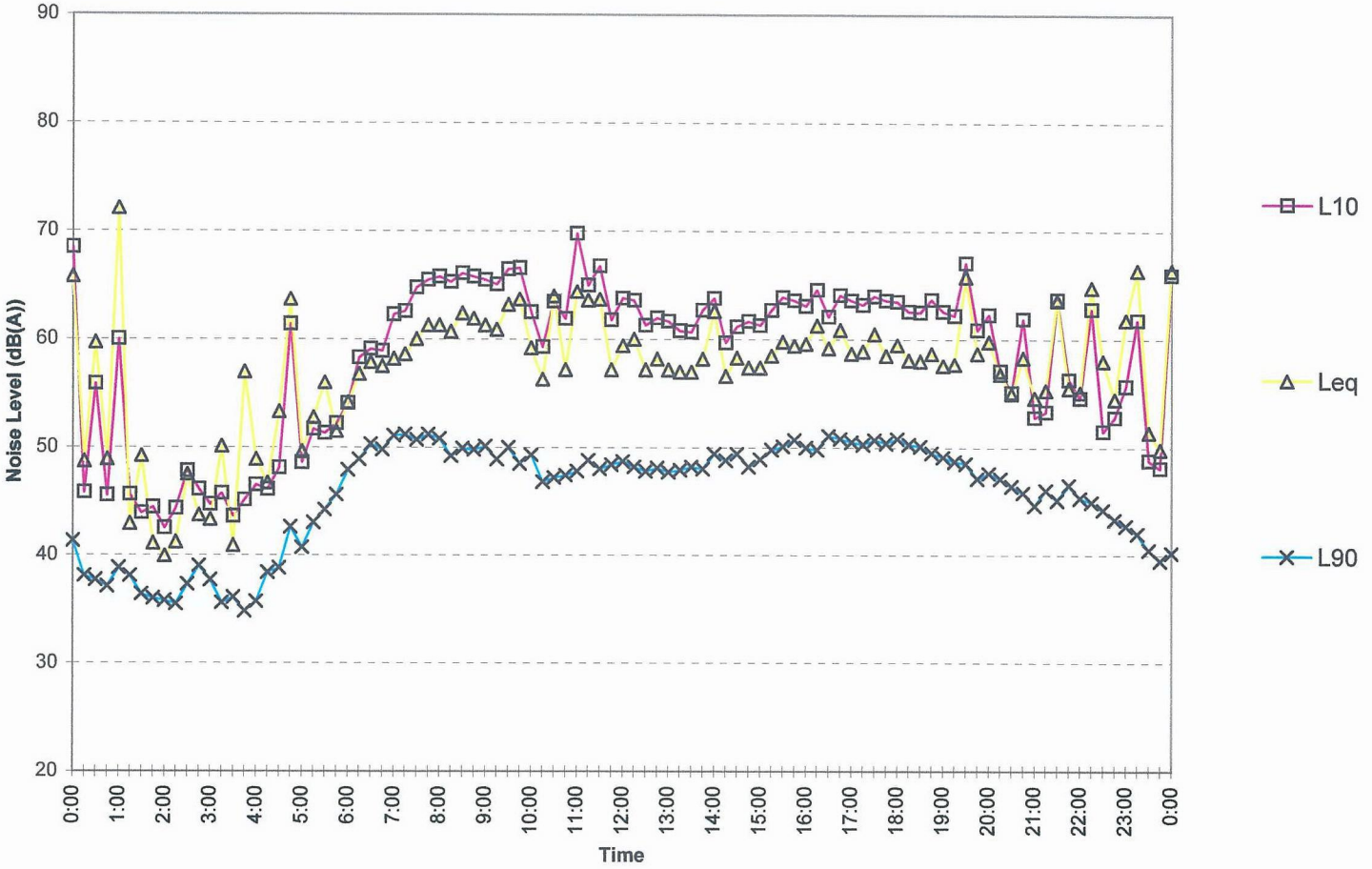

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92A Sutherland Road, Beecroft

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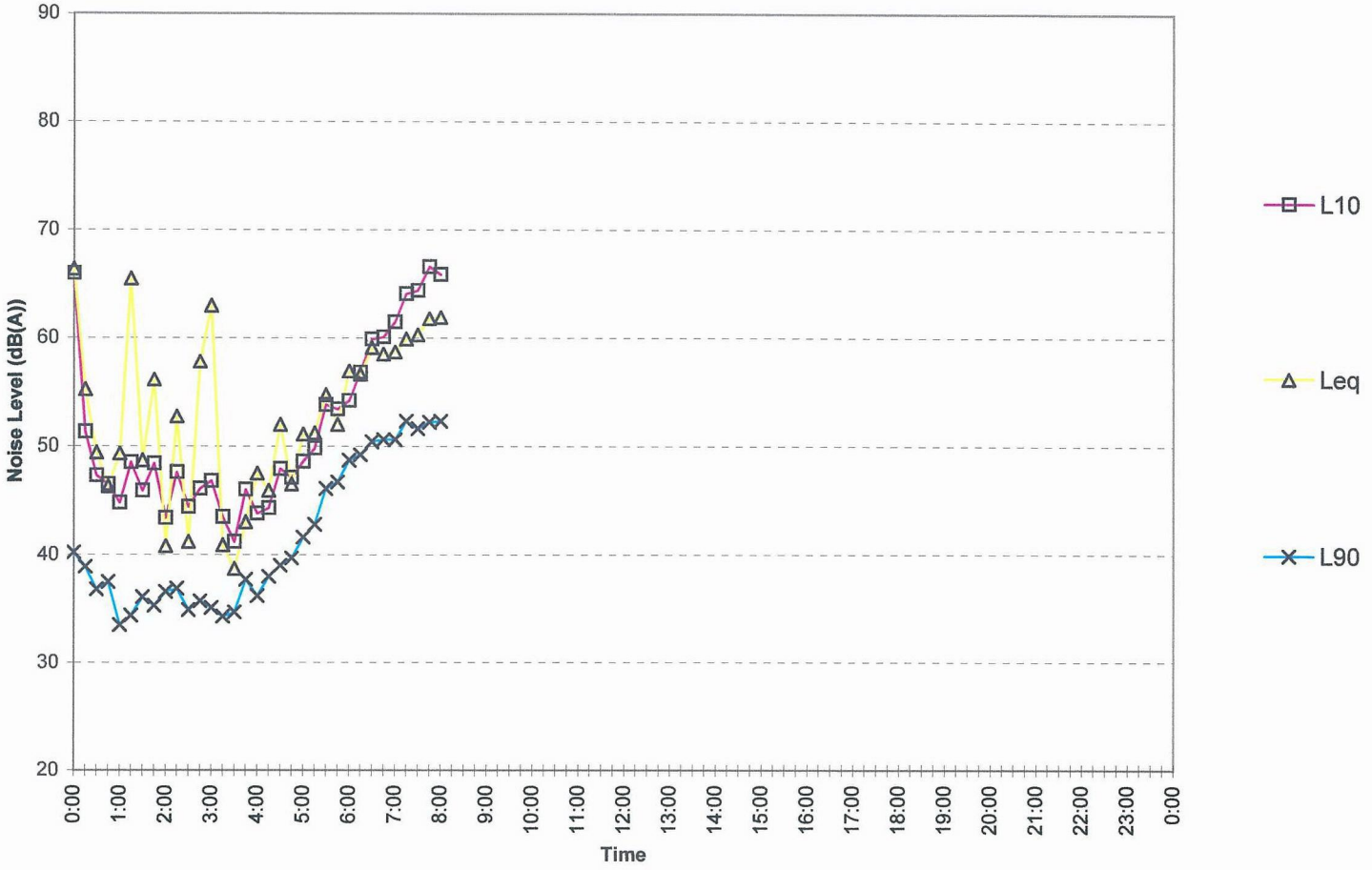

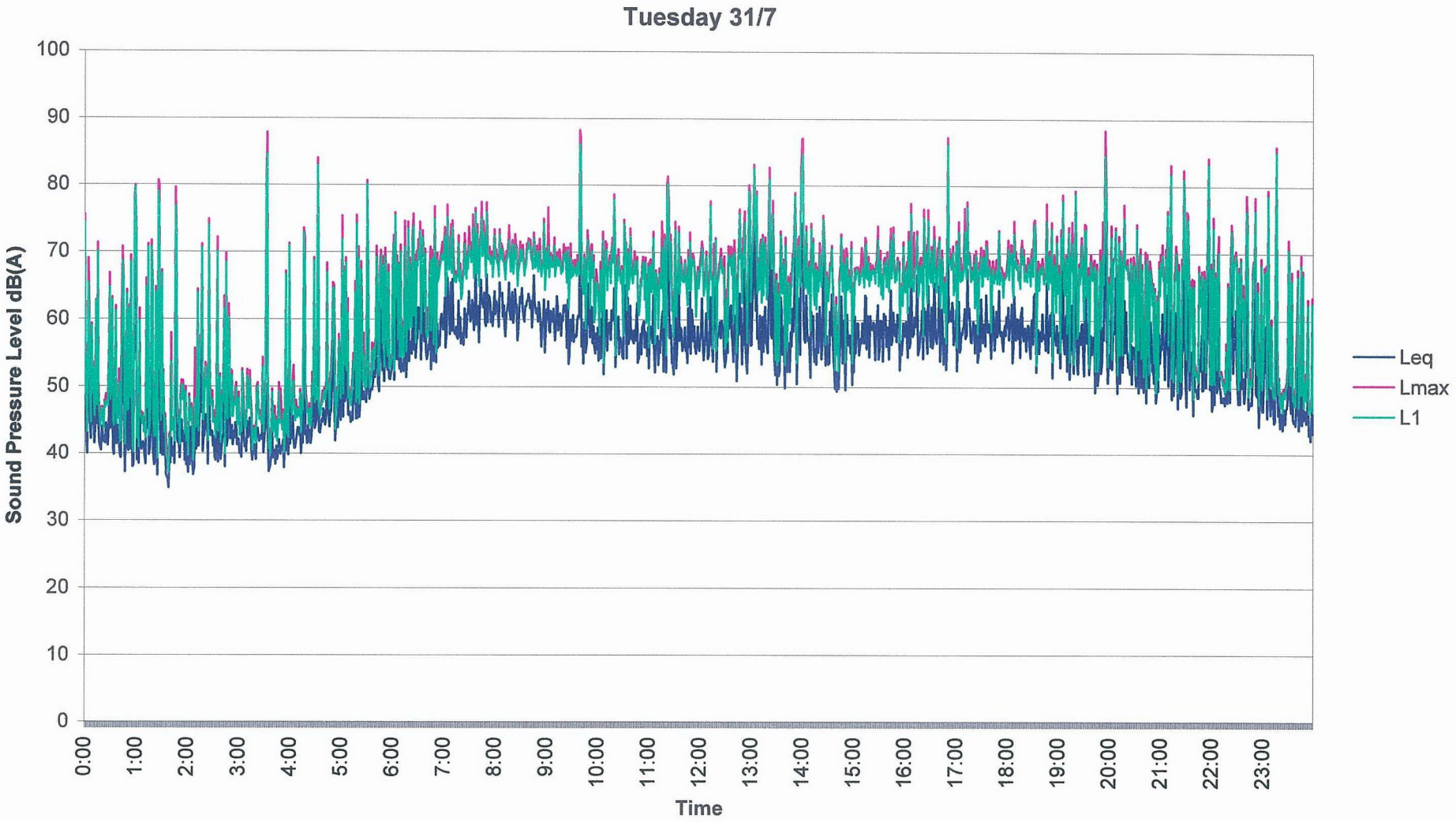
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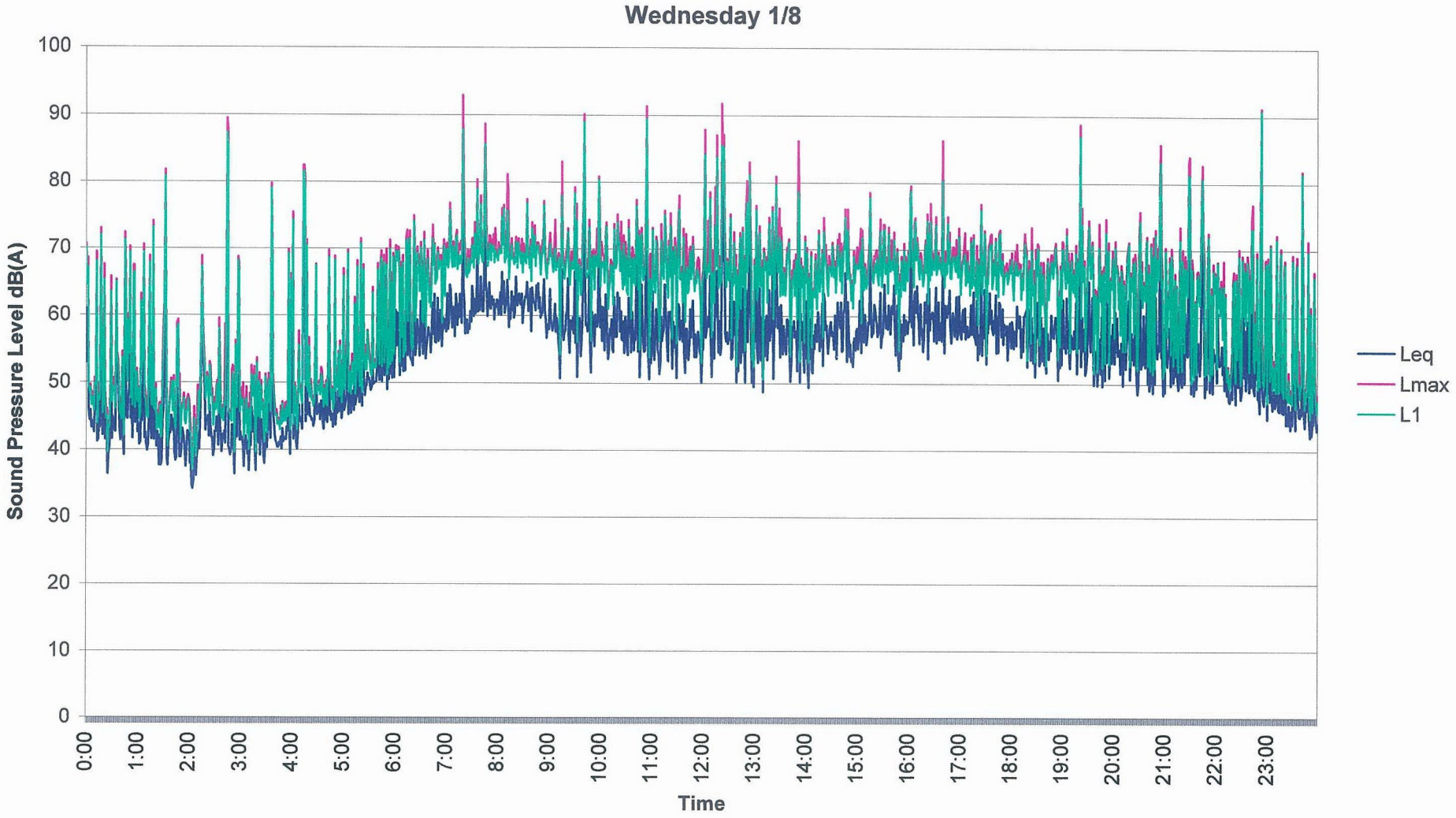
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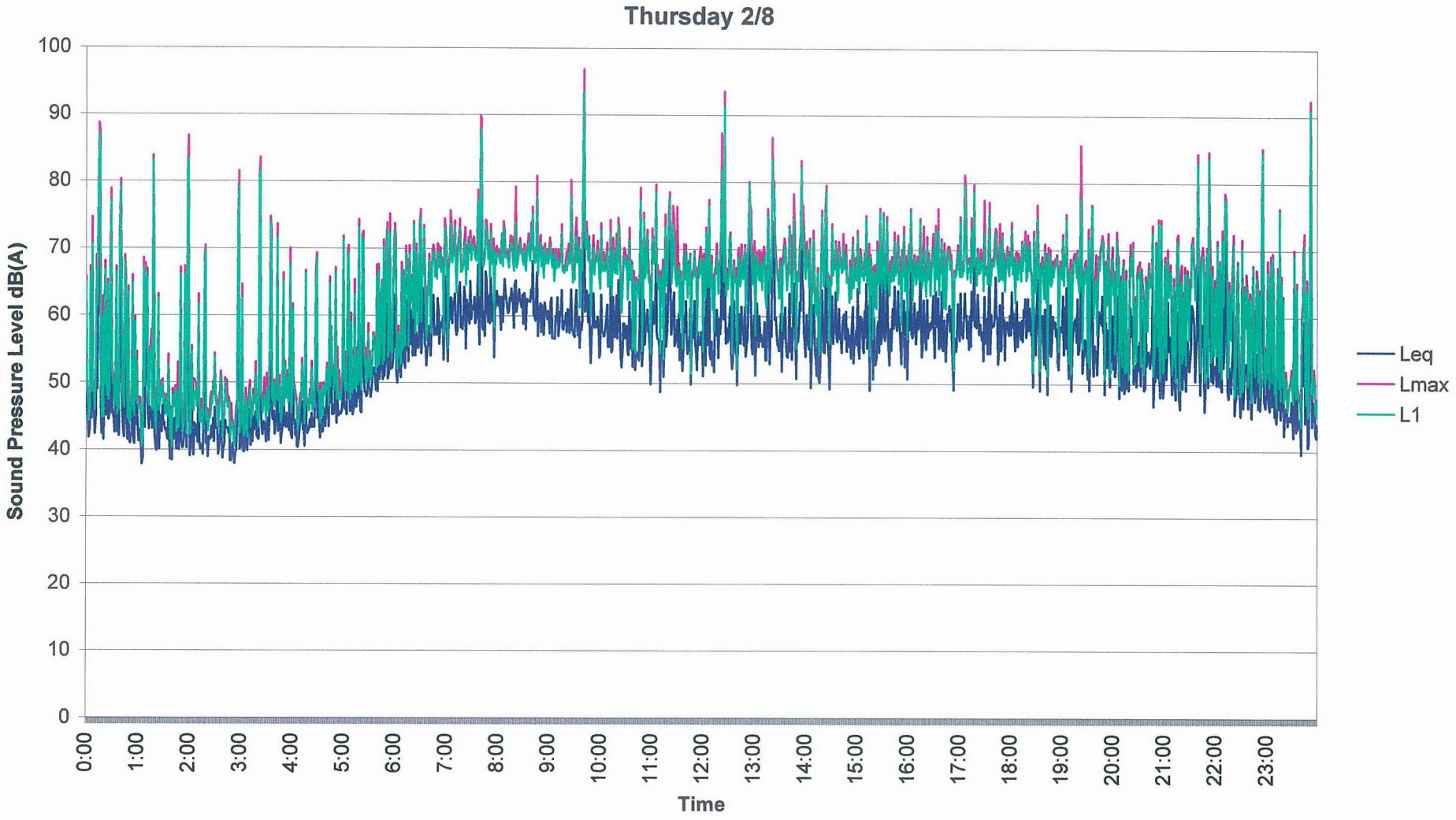
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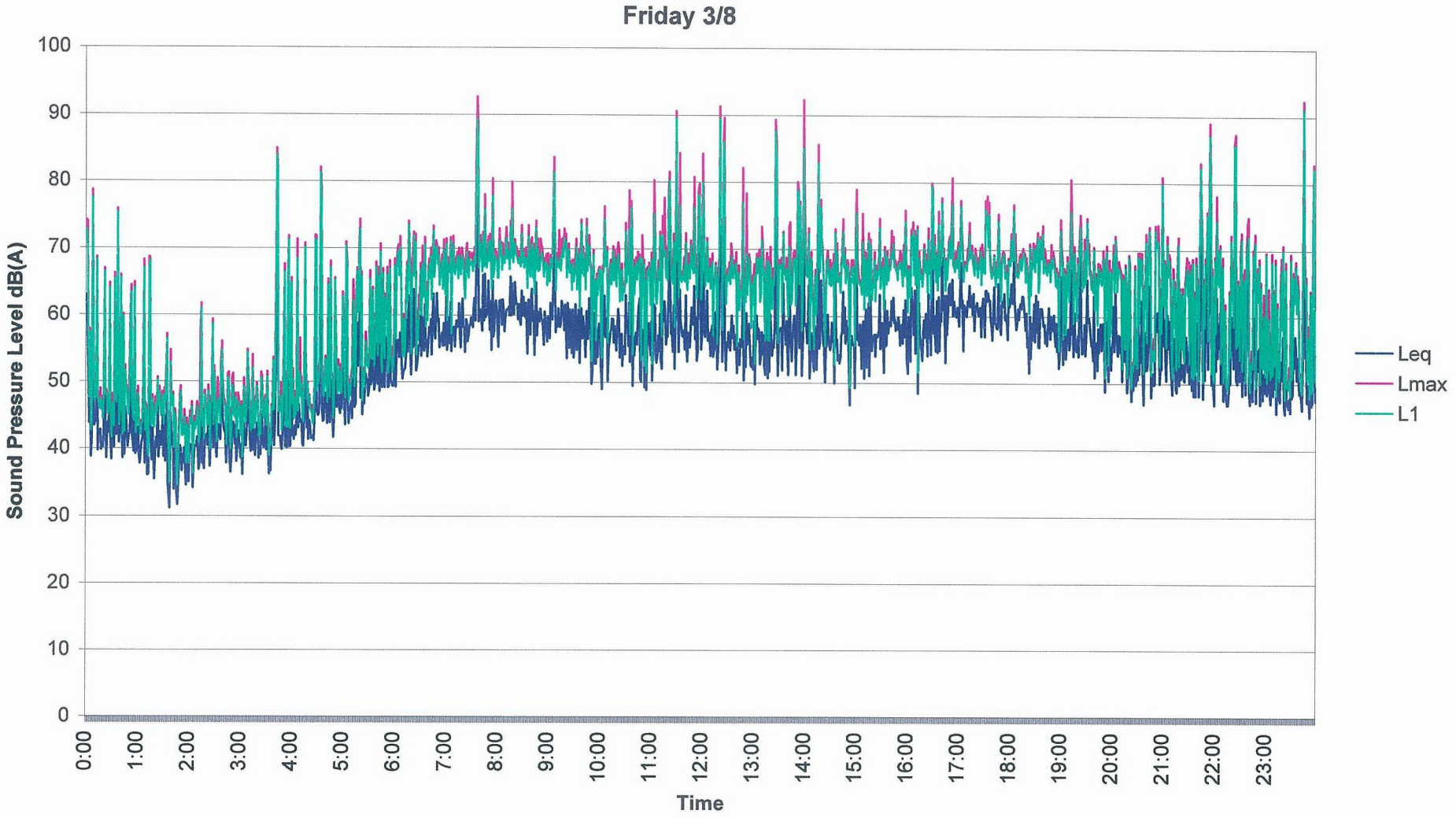
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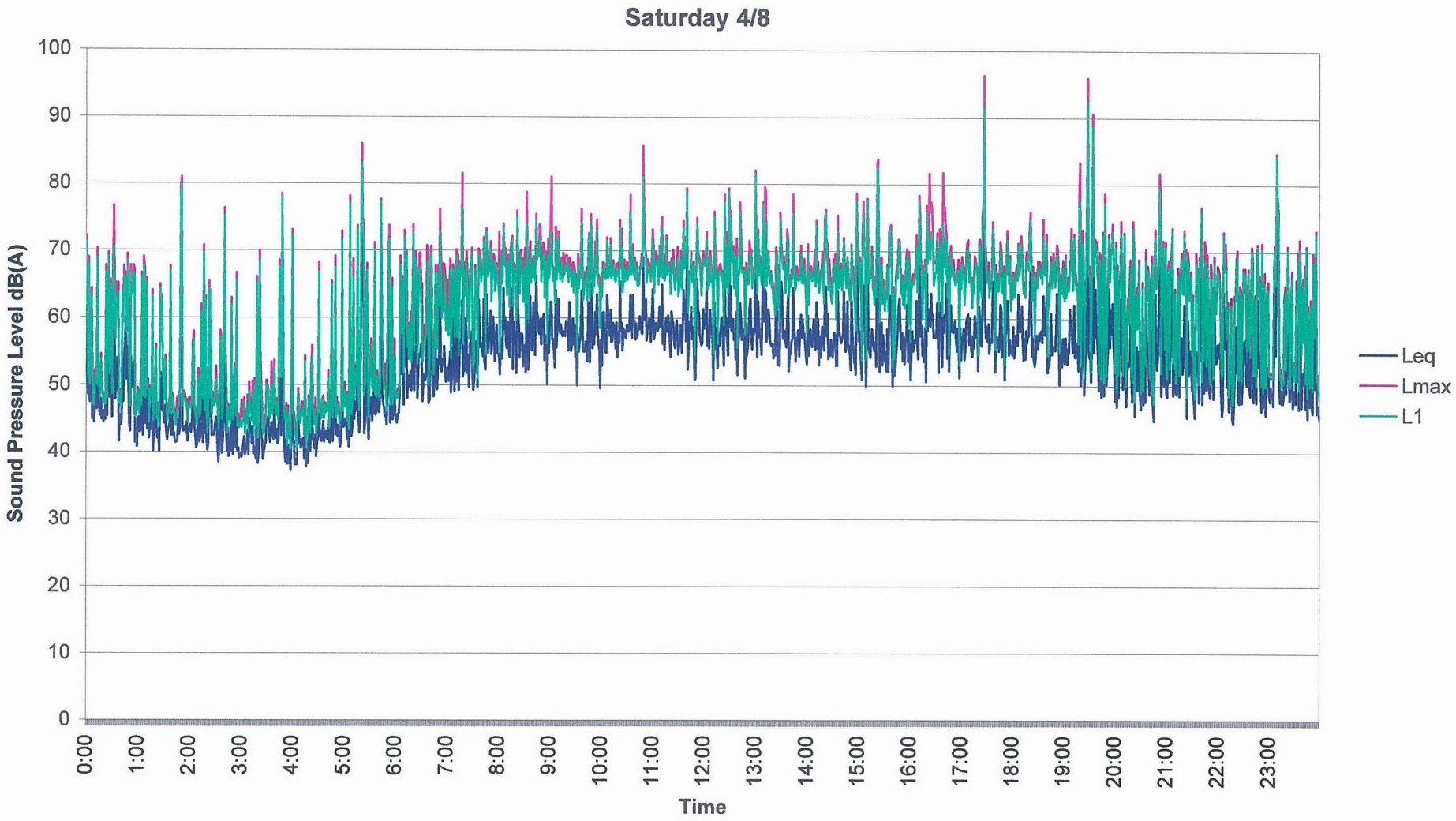
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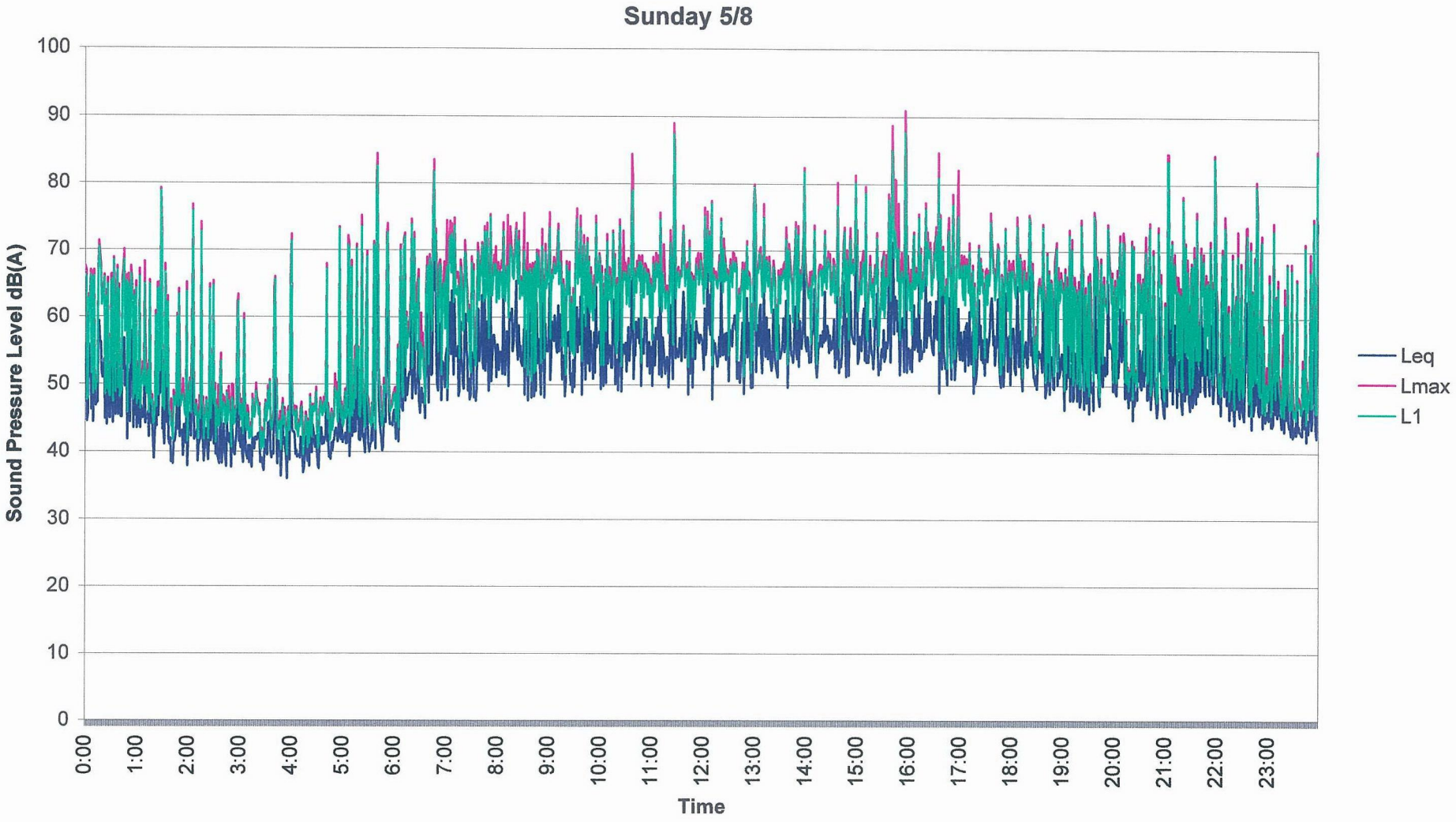
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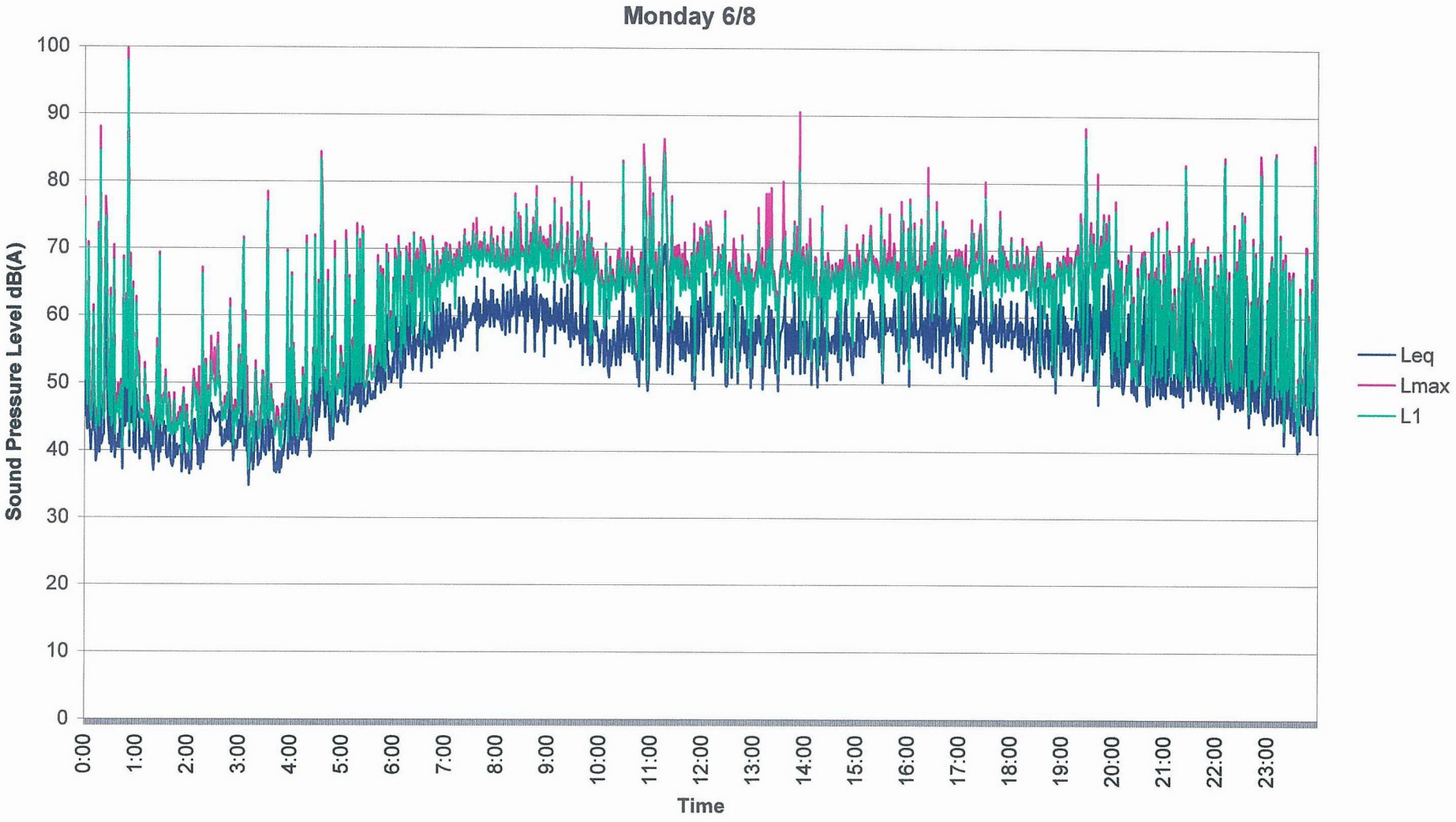
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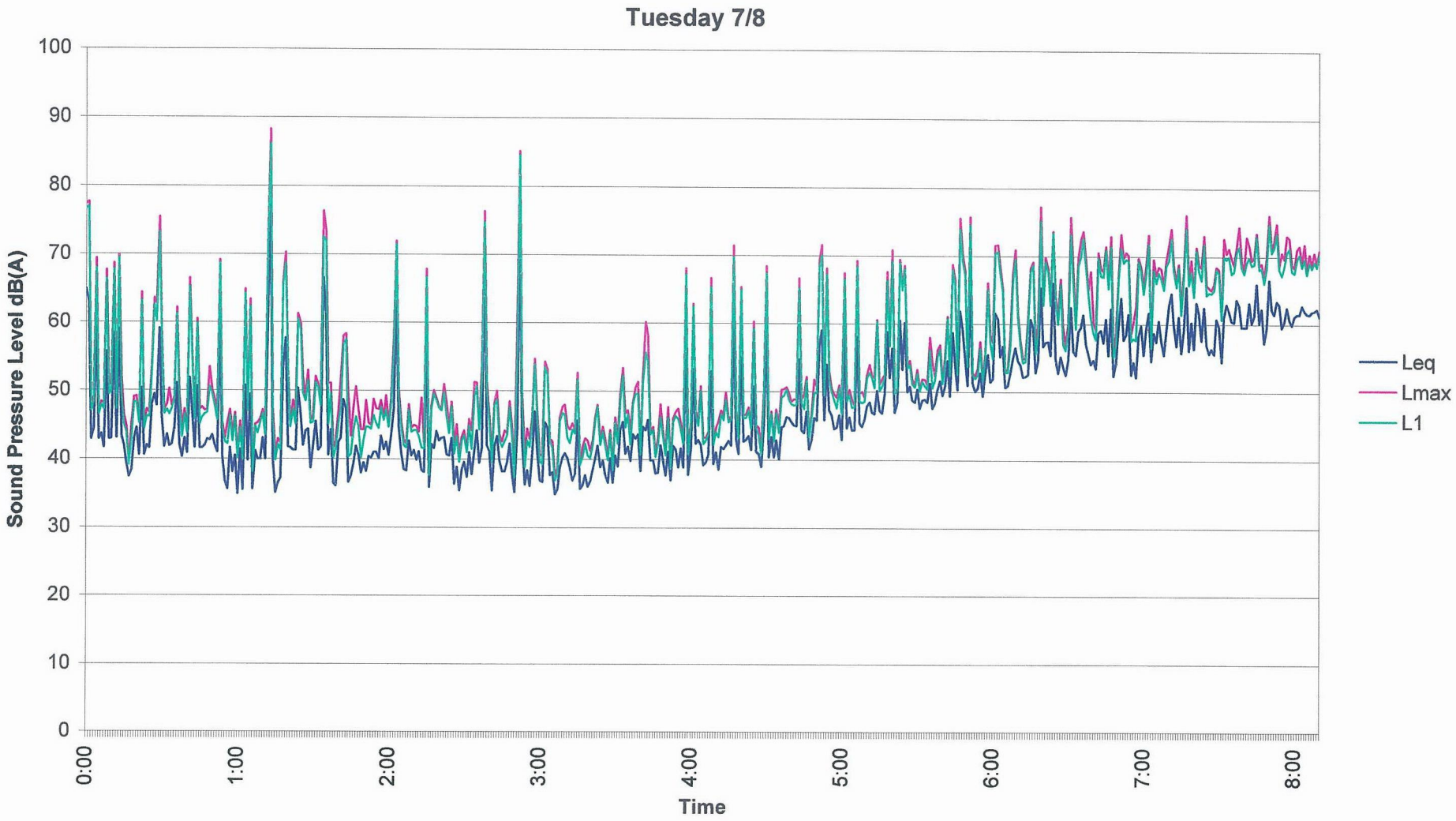
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