Acoustic South East

Noise Impact Assessment

Site: **Land at Northbrook MET Carpark**
Client: **Compass Travel**

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Project: J3773
Issue 1

Acoustic South East

Sound Insulation Testing - Acoustic Design of Buildings - BS4142 - PPG24 - Schools Acoustics BB93 - Vibration - Expert Witness Testimony - Noise at Work - Air Tightness Testing - Auditorium Acoustics

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Document Control

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Issue 1	19/07/2024	Initial Issue

This report has been prepared by Acoustic South East with all reasonable skill, care and diligence and presents information included within the scope agreed with the client. If any third party whatsoever comes into possession of this report, they rely on it at their own risk and Acoustic South East accepts no duty or responsibility (Including in negligence) to any such third party.

1 Introduction

Acoustic South East have been appointed to undertake an acoustic assessment relating to a planning application for redevelopment of part of the land within the carpark of Northbrook MET into Bus Storage Grounds for Compass Travel.

It is understood that there is currently a temporary planning consent for Compass Travel to operate on this site and Acoustic Associates Sussex Ltd (now trading as Acoustic South East) assisted in the noise surveys to assist with that.

This report will be submitted as part of the planning application for permanent use of the Northbrook MET site by Compass Travel.

For this assessment, 3 separate noise surveys were undertaken: On each survey visit, attended measurements were carried out during the morning period 05:30hrs – 08:00hrs for initial bus departures and again for the final bus arrivals between 17:30hrs – 20:00hrs. Between these times, an unattended sound level meter was situated at the boundary with the nearest NSR. With the assistance of a GoPro video camera (focused solely on Compass Travel's depot) for Survey Visits 2 and 3 it was possible to associate noise levels with activities on site for the duration of the unattended survey period. (This was not available for visit 1 due to equipment availability).

The data in this survey shows sound pressure levels due to how Compass Travel are currently using the site for their operations and they show comparison against previous assessments on this site (without them present?) as well as assessment across the seasons.

The main outcome of this assessment in Section 4 shows that the average LAeq sound pressure levels reaching the NSR from Compass Travel's current operation in comparison with when they were not present sees changes in SPL ranging from 0 - 2dB.

Considering that the lowest detectable change in SPL by a human is 3dB, it is concluded that these differences are negligible and would not have an adverse impact on residents.

Based on the outcome of this report, it is recommended that planning consent for permanent operation is not withheld on the basis of noise.

2 Context, Noise Criteria & Noise Assessment Methodology

2.1 Context

Compass Travel are looking to permanently operate their bus storage facilities at the western-half of the car park of Northbrook MET, Goring, West Sussex (a site which up until now is currently under-utilised).

There is currently a temporary planning consent for use of this site by Compass Travel.

Entry to and exit from the site is directly via the gate to Titnore Lane and then through a gate into the compound via a gate to the south. All buses face east when parked, having driven into the compound forwards and then reversed into their parking space. As a result, all engines will be closest to the west boundary, furthest away from the residential receptors and as a result the buses themselves act as a sound barrier to this engine sound when idling in this position. This also ensures that buses will drive out forward in the morning to prevent use of any reversing alarms being present and keeps bus exit durations to a minimum.

This site is to be used for bus storage and cleaning of buses only, plus associated office space at the south of the site. External cleaning of buses occurs on site with the use of a power washer but this occurs during evening hours only (from approximately 16:00hrs until no later than 23:00hrs). All maintenance involving power tools will be carried out off site (and carried out at the depot in Lewes) with the exception of small non-noisy works such as changing headlamps, wipers, screen-wash filling etc and the occasional tyre change where necessary.

2.2 Soundscape and Commercial Setting

Part of the site is currently used as a carpark for users of the Northbrook MET college. To the west runs Titnore Lane, which is a heavily used road linking the A2032/A259 and the A27. To the north east of the site is St, Barnabas Hospice. The dominant ambient sound source is road traffic from these roads and this ramps up heavily between 06:00hrs – 07:00hrs as commuters begin their travel. During the evening when buses are returning to site, there is a lot of arrival of patrons to the Northbrook MET carpark for evening activities, which is significantly closer to the nearest NSRs and also for their duration, relatively louder.

2.3 Hours of Use

Buses will typically leave site between the hours 05:45hrs – 08:00hrs of each day and return to site between the hours of 18:00hrs – 20:00hrs. Cleaners are then present on site until 23:00hrs. During the day, some buses and coaches will come and go as demand requires.

2.4 Nearest Residential Receptor/s

The nearest residential receptors are houses in the cul-de-sac of Red Kite Way, whose rear gardens open out toward the car park of Northbrook MET.

2.5 Proposed Site

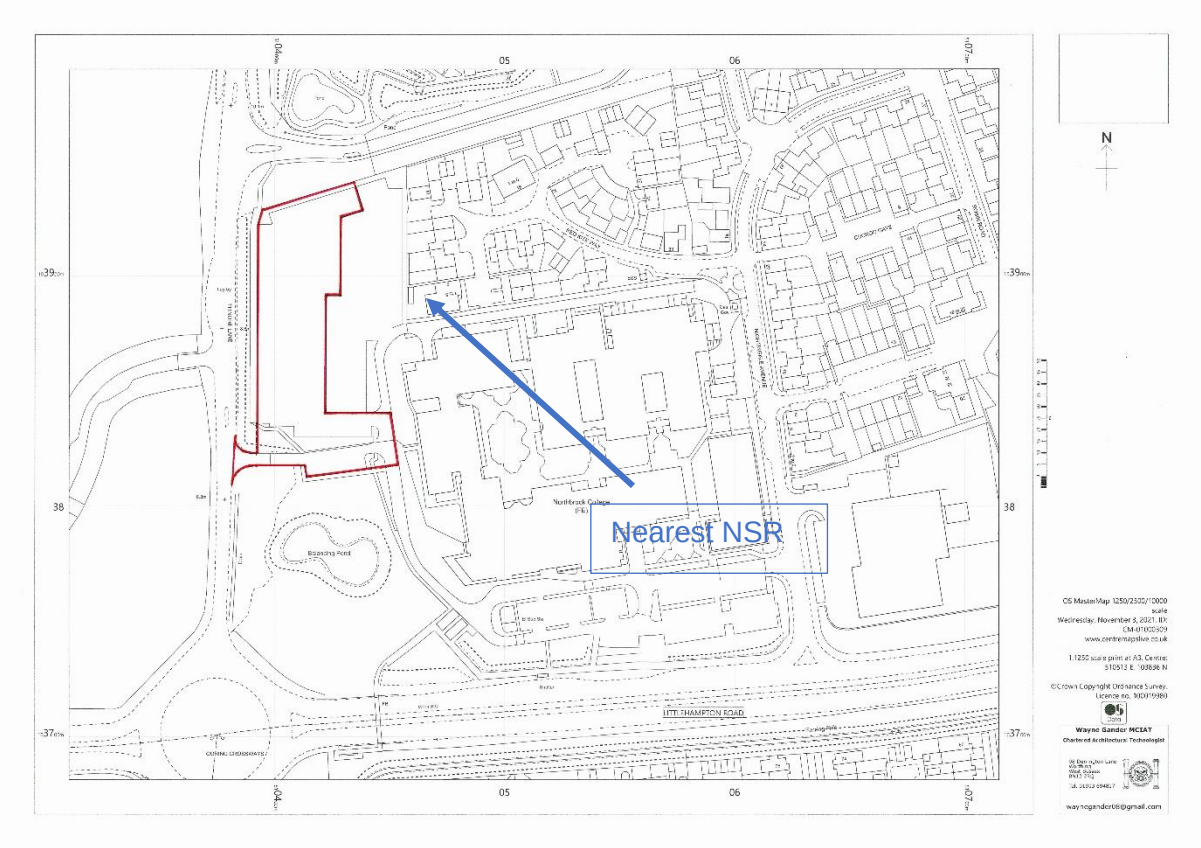


Figure 1: Site Location as provided by Client

2.6 Site Layout (current planning consent layout)

The arrows on the rectangles in the drawing below represent the position of the buses' engines.

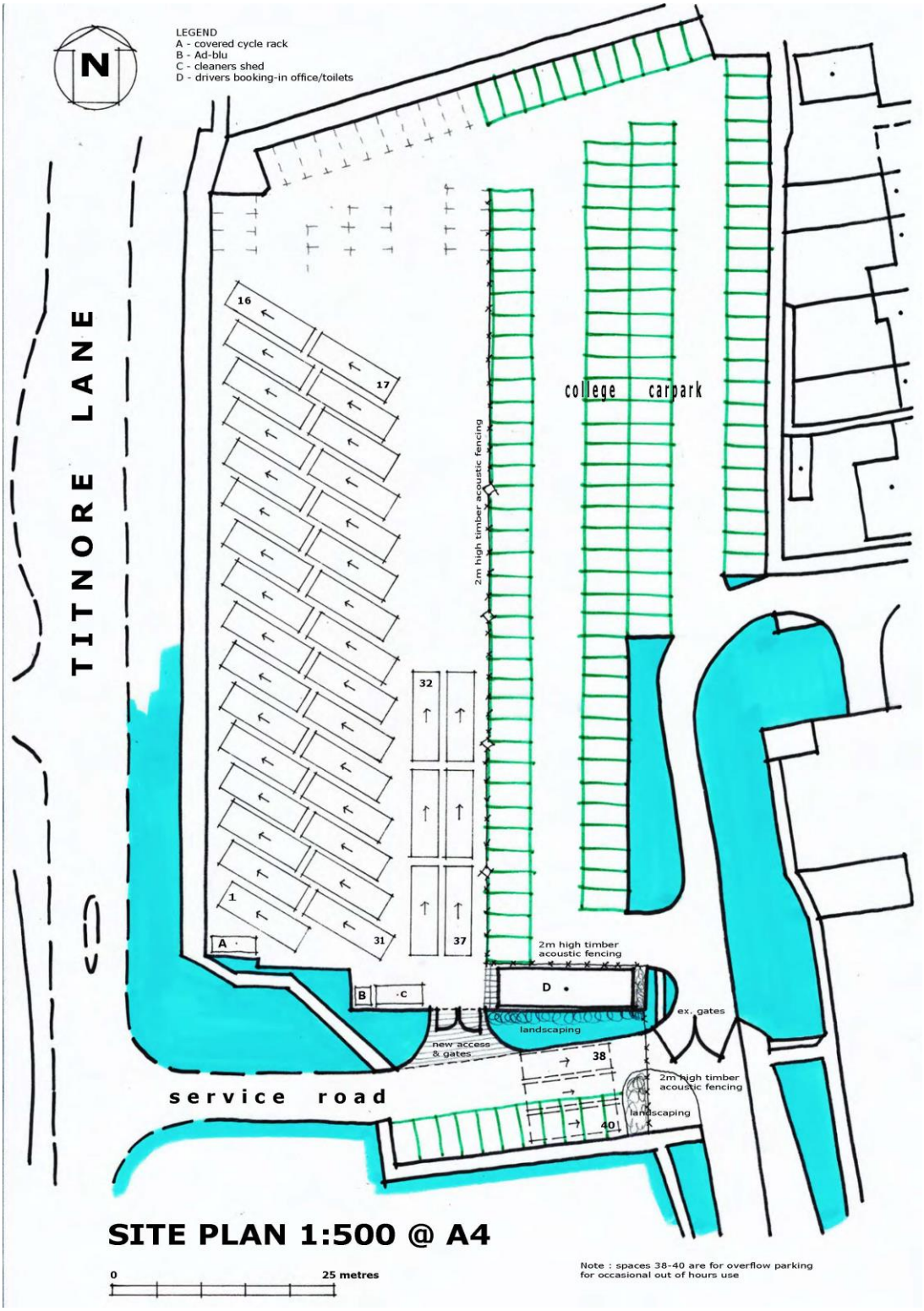


Figure 2: Current Compass Travel Layout

2.7 BS8233:2014 (Guidance on sound insulation and noise reduction for buildings)

Table 4 of BS8233 provides the following guideline values:

Activity	Location	Time period of day	
		07:00-23:00	23:00-07:00
Resting	Living Rooms	35dB $L_{Aeq,16hour}$	-
Dining	Dining Room/Area	40dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$

Table 1: BS8233 Criteria

2.8 Methodology and Approach

The following is the methodology used for this survey and assessment:

1. Attend site for approximately 05:30hrs and carry out an attended noise survey (with a resolution of 1min) whilst also taking notes of Compass Travel activity.
2. Install a sound level meter to run unattended from 08:00hrs (approx.) until return to site at 17:30hrs (approx.)
3. Attend site for approximately 17:30hrs and 20:30hrs to carry out an attended noise survey whilst also taking notes of Compass Travel activity.
4. Carry out items 1-3 above for three times over different seasons
5. Process the LAeq (Sound Pressure Level) for the survey.
6. Compare the SPLs from this assessment against the existing background sound levels and previous assessment levels.
7. Assess the data in accordance with the criteria of BS8233:2014.
8. Discuss mitigation measures if required and conclude.

3 Sound Survey Details

Surveys were conducted on the 3 following dates which had bus operations representative of normal day to day movements:

- Thursday 11/01/2024
- Wednesday 12/04/2024
- Thursday 27/06/2024

A survey has also previously been carried out on 21/11/2021 without Compass on site to determine a baseline soundscape assessment and an assessment was also carried out in February 2023 when Compass were first operating on site. Both of these are used for comparisons.

3.1 Sound Survey Details

Survey(s) carried out by	Simon Barrett BSc(Hons) MSc MIOA
Equipment Used (attended)	Norsonic Nor118 mounted on tripod (freefield)
Equipment Used (unattended)	Norsonic Nor140 mounted on pole on NSR boundary fence (façade)
	Go Pro, pole mounted by Compass Travel compound entrance
Equipment Used	Norsonic Type 1251 Acoustic Calibrator

Table 2. Survey Details

The sound level meter was calibrated before and after commencing the noise measurements (@114dB with no drift). The sound level meters were set to measure in 1-minute increments.

The attended sound level meter was positioned such that all measurements are “free-field”. The un-attended sound level meter was positioned such that all measurements are “façade-level”.

The sound level meter locations can be seen in the figure below:

During Survey visit 3, some measurements of the Karcher power washer were also carried out.

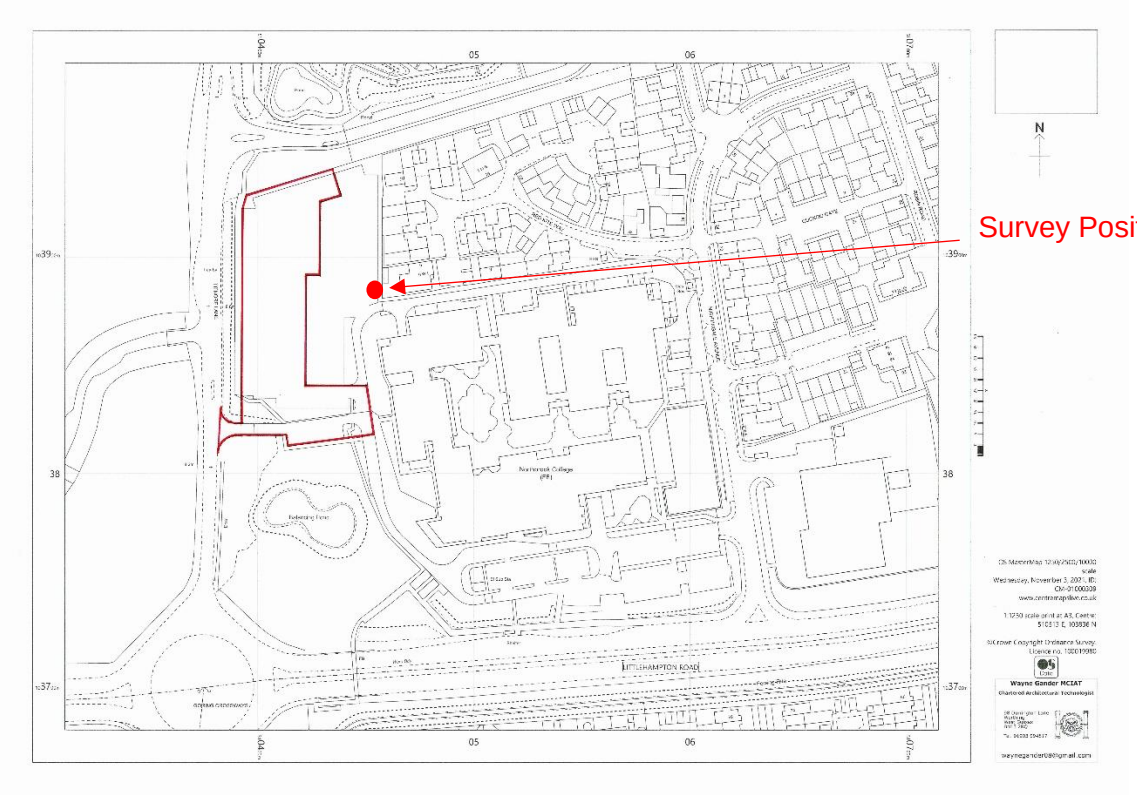


Figure 3: Survey Position

3.2 Weather Conditions

Surveys were all undertaken on days where suitable weather conditions existed. Wind speeds were variable but below 5m/s and on dry days. All measurements are therefore valid.

4 Survey Data

Over the next section on the following pages is data from the 3 survey visits.

The data is designed to show the impact of Compass Travel's operation on the site at present in terms of noise levels.

Data is provided in graphical form for each of the survey periods on each of the survey dates.

This is a time history of the SPL at the boundary with the nearest NSR.

- The Blue line refers to the current Compass Travel operation on site.
- The Orange line refers to the survey conducted in November 2021 prior to Compass Travel
- The Grey line refers to a time when Compass Travel began their operation on site and is included for completeness.

On these graphs is annotation relating to when compass travel activity occurred in line with notes taken during the attended surveys.

On the graphs for the un-attended surveys, survey dates 2 and 3 also contain annotation to show important information to indicate how the higher SPLs were not due to Compass Travel – this was aided by the use of a video camera recording for the duration of these unattended surveys (this was not possible during un-attended survey of visit 1 due to equipment availability).

Areas on the graphs with red rectangles show the activities of Compass Travel. Other activities, where relevant to note, are in green. The 2nd of the three surveys are annotated with descriptions also.

The graphs for the morning attended surveys also show the comparison with previous surveys on this same site both when there was no Compass Travel operation and also when a survey was undertaken before the temporary planning consent was granted.

4.1 Morning Attended Surveys

4.1.1 Survey 1 – 11th January 2024

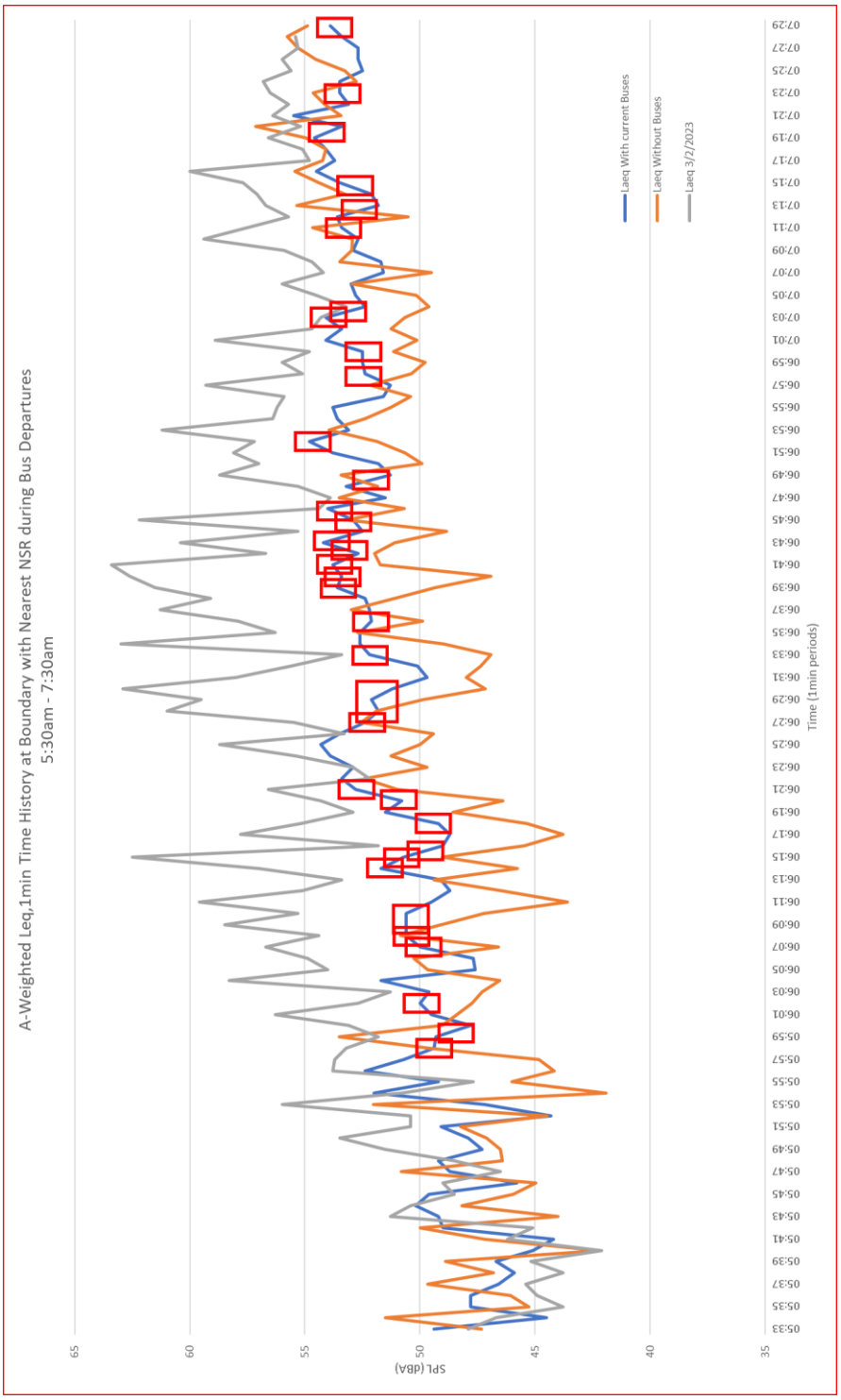


Figure 4: Sound Pressure Level at boundary with NSR 05:30 – 07:30hrs (Survey 1)

4.1.2 Survey 2 – 12th April 2024

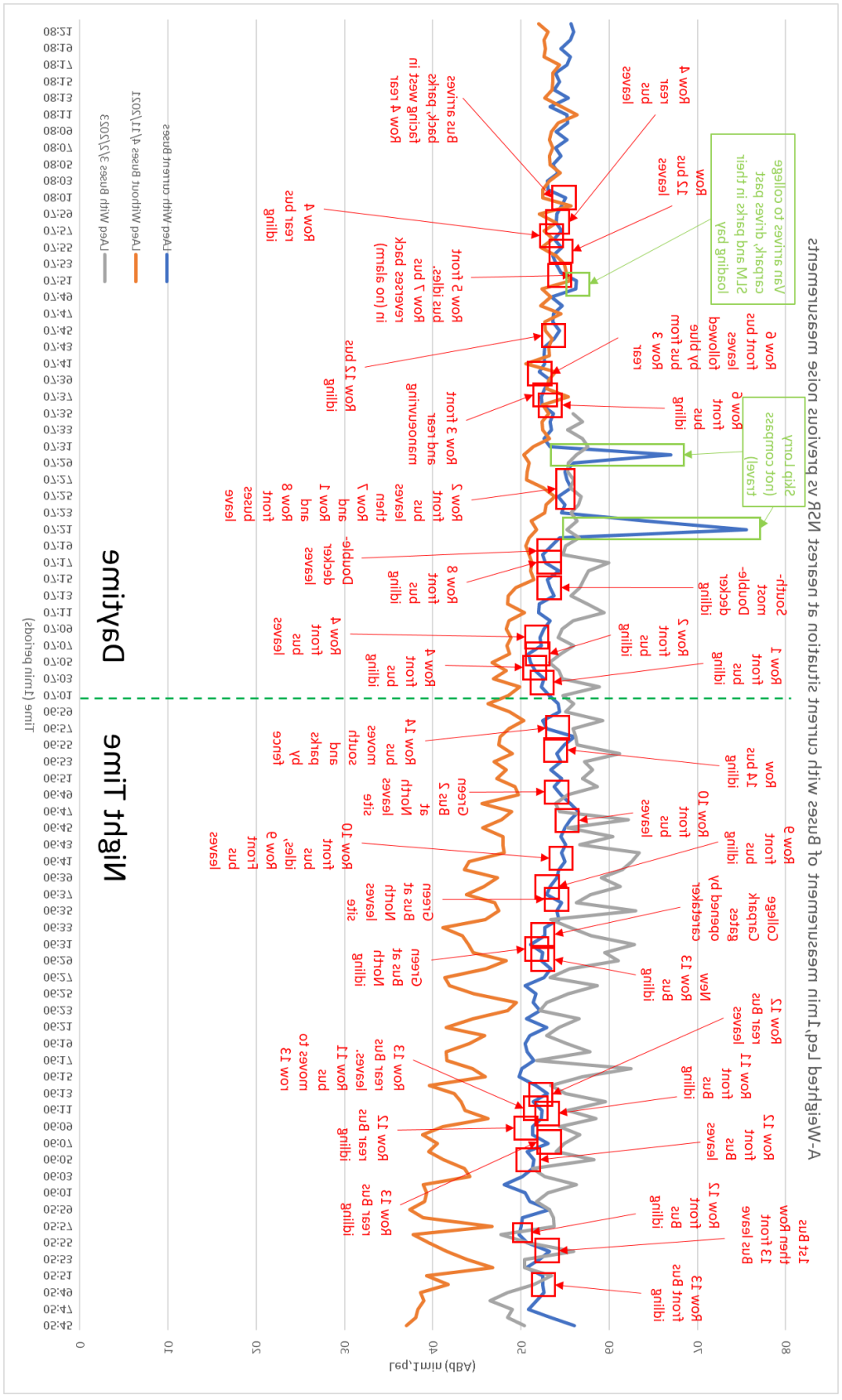


Figure 5: SPL at NSR boundary 05:45 - 08:20hrs (Survey 2)

4.1.3 Survey 3 – 27th June 2024

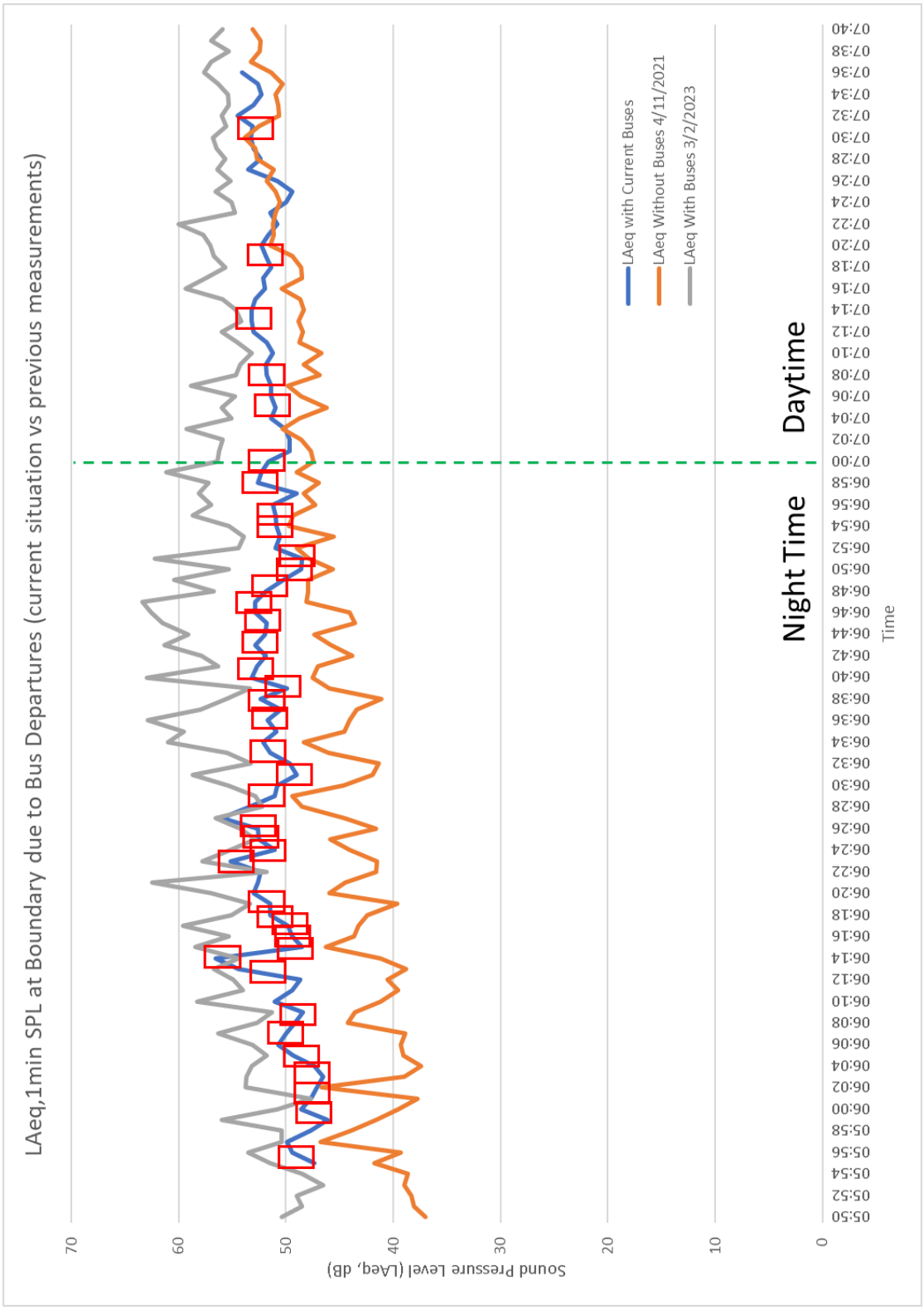


Figure 6: SPL at NSR Boundary 05:50 – 07:40hrs (Survey 3)

4.1.4 Commentary on Morning Attended Surveys

As can be seen from the graphs from all three surveys for the morning period of initial bus departures, the SPL over the time history is very much in between the time history traces of the previous assessments when no buses operated on site in late 2021 and when buses were operating on site at the beginning of 2023.

It is also important to state that whilst in some cases the bus operation was higher in SPL than when no buses operated on site, in many cases the bus operation was actually no louder or even quieter than the site when no buses were present. This suggests a very fluctuating soundscape regardless of Compass Travel.

In Survey 3 it is clearest that the sound pressure level is fairly even across the whole morning measurement period.

The buses do not depart in a particular order as per a suggested mitigation measure in the author's previous reports (Reference "J3299 Issue 4" dated March 2023) and from discussing this with Compass Travel, this does not make operational sense as the reality is that there are often changes to rotas or needing to swap buses due to a breakdown or damage etc.

The LAeq for the "night time" portion of the survey and the "daytime" portion of the surveys can all be seen in the table below:

Survey Number	Leq (dBA) per Time Period	
	"Night time" portion (pre 07:00hrs)	"Daytime" portion (post 07:00hrs)
1	51.2	53.2
2	53	54*
3	51.3	52.3

Table 3: LAeq,T for morning periods – Current bus situation

* In the table above, the value of 54dBA is with three one-minute periods removed where a skip lorry arrived and vacated the local Northbrook MET carpark, close to the nearest NSR and measurement location. If they were left included, the value would have been 58.9dBA showing that activities do occur closer to the nearest NSR which are significantly louder than that of the Compass Travel site.

It is also interesting to note that despite the different seasons, there is little variance in overall Leq SPL for the time periods across each of the surveys.

This along with the graphical data shows that the SPL due to Compass Travel during the morning periods is very linear in its soundscape.

As the survey location was 3.5m from the fence-line of the boundary with the nearest NSR's garden (in order to be free-field) and a then an additional 8.5m from the building's façade, a correction for an additional 12m distance attenuation is required taking the assessment distance from 50m to 62m. This equates to a 1.9dB reduction in SPL (20 log reduction due to the source being a point source).

The table overleaf shows the distance-corrected SPLs.

Survey Number	Leq (dBA) per Time Period (Distance Corrected)	
	"Night time" portion (pre 07:00hrs)	"Daytime" portion (post 07:00hrs)
1	49.3	51.3
2	51.1	52.1
3	49.4	50.4

Table 4: LAeq,T for morning periods – Current Bus situation (distance corrected)

In terms of assessing these ambient sound levels, whilst the sound source is commercial, there is a significant portion of sound reaching the nearest NSRs that is not from Compass Travel's operations, but of road traffic, which significantly ramps up during this time with commuter traffic and subjectively is the majority of the soundscape. From subjective listening during these surveys, there was no tonality, impulsivity or intermittency that was perceptible at the measurement location as was fairly anonymous due to the gradual and linear nature of the buses.

As Compass Travel are now operating fully on site, assessment against BS8233 is considered more suitable as a comparison in terms of before and after is more accessible.

Additionally, further assessment using methods provided in the Design Manual for Roads and Bridges (DMRB) due to changes in sound pressure levels due to changes in vehicle movements.

Table 1 of this document shows the BS8233 criteria for internal noise levels.

Latest guidance from documents such as ProPG Planning and Noise use 13dB for attenuation through a window which is partially open. Using this attenuation against the values in Table 4, above we see internal ambient noise levels between 36.3dBA - 38.1dBA for the period between 5:45 and 07:00hrs and internal ambient noise levels between 37.4dBA - 39.1dBA for the period after 07:00hrs.

As there is also data for a time prior to buses existing on site (November 2021), a similar finding has been created and this is shown in Table 5, below:

Survey Number	Leq (dBA) per Time Period (Distance Corrected)	
	"Night time" portion (pre 07:00hrs)	"Daytime" portion (post 07:00hrs)
Pre-Buses Nov 2021	47.8	51.8

Table 5: LAeq,T for morning periods – Pre-bus operation (distance corrected)

Using the same 13dB attenuation for open windows as above, the internal ambient noise levels would be 34.8dBA between 5:45 – 07:00hrs and the internal ambient noise levels would be 39.8dBA for the period after 07:00hrs.

When comparing the difference between with and without buses during these morning periods, is between 1.5dB, 1.6dB and 3.3dB (with the mean average difference being 2.1dB) for the period prior to 07:00hrs. For the period after 07:00hrs the difference ranges from -1.4 and 0.3dB (two of the surveys actually show ambient sound levels **are** quieter than the survey without buses during this later morning period) with the mean average difference being 0.5dB.

It is now also important to state that the earliest perception of change in sound level to a human is 3dB, of which both of the average changes in sound level outlined above are less than.

The changes during this morning period are therefore considered negligible to (at worst-case), minor.

The tables below extracted from DMRB confirm this assessment conclusion.

Table 3.17 Magnitude of impact at receptors

Magnitude of impact	Increase in BNL of closest public road used for construction traffic (dB)
Major	Greater than or equal to 5.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Minor	Greater than or equal to 1.0 and less than 3.0
Negligible	Less than 1.0

Figure 3. Table 3.17 Extracted from LA111

Table 3.54a Magnitude of change - short term

Short term magnitude	Short term noise change (dB $L_{A10,18hr}$ or L_{night})
Major	Greater than or equal to 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	less than 1.0

Figure 4. Table 3.54(A) - Short Term Change - Extracted from LA111

Figure 7: Extract from DMRB: Impact due to change in sound pressure levels

4.2 Daytime Unattended Surveys

4.2.1 Survey 1 – 11th January 2024

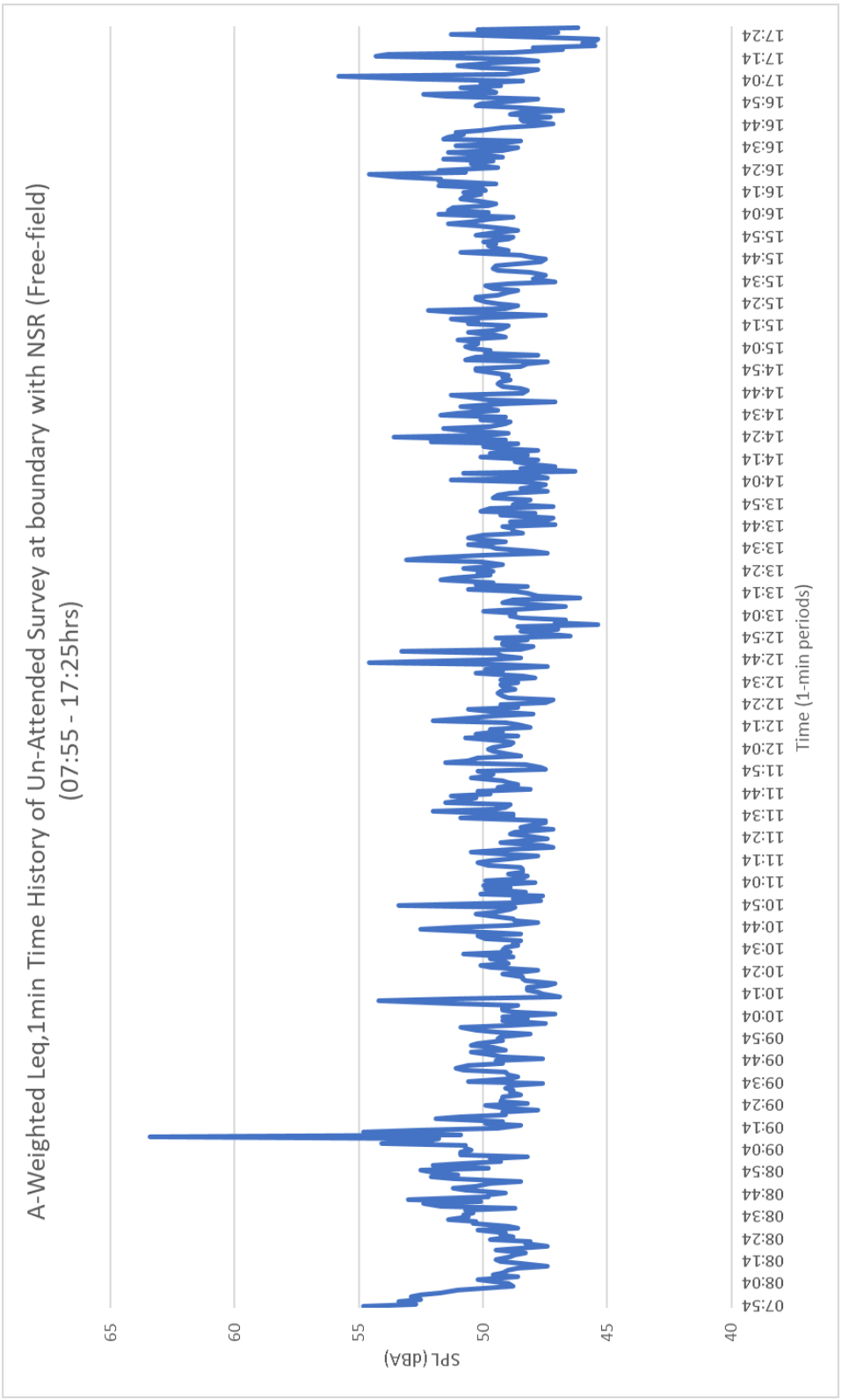


Figure 8: Sound Pressure Level at boundary 08:00 - 17:30hrs (Survey 1)

4.2.2 Daytime Un-attended Survey

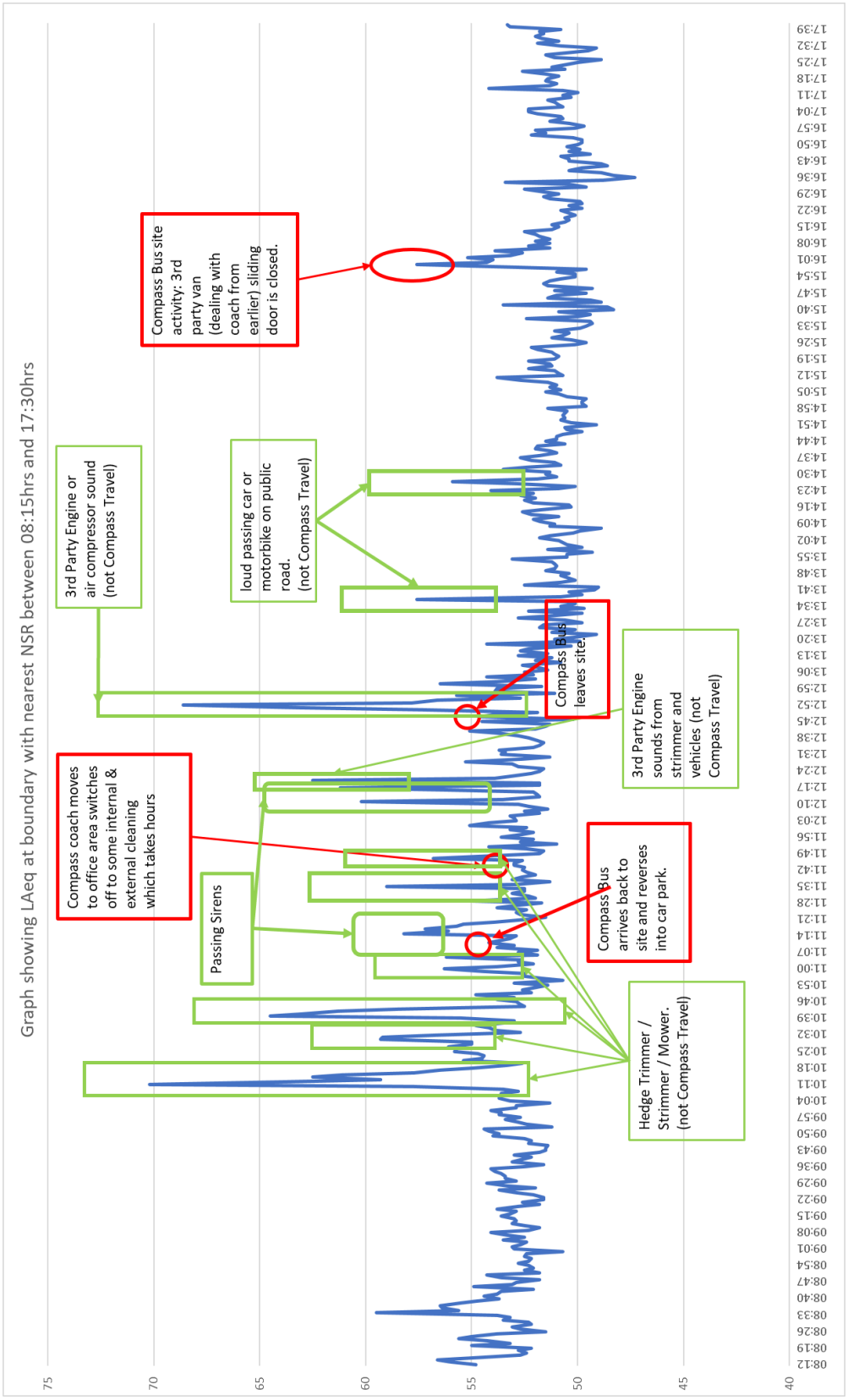


Figure 9: SPL at NSR Boundary 08:15hrs - 17:30hrs (Survey 2)

4.2.3 Survey 3 – 27th June 2024

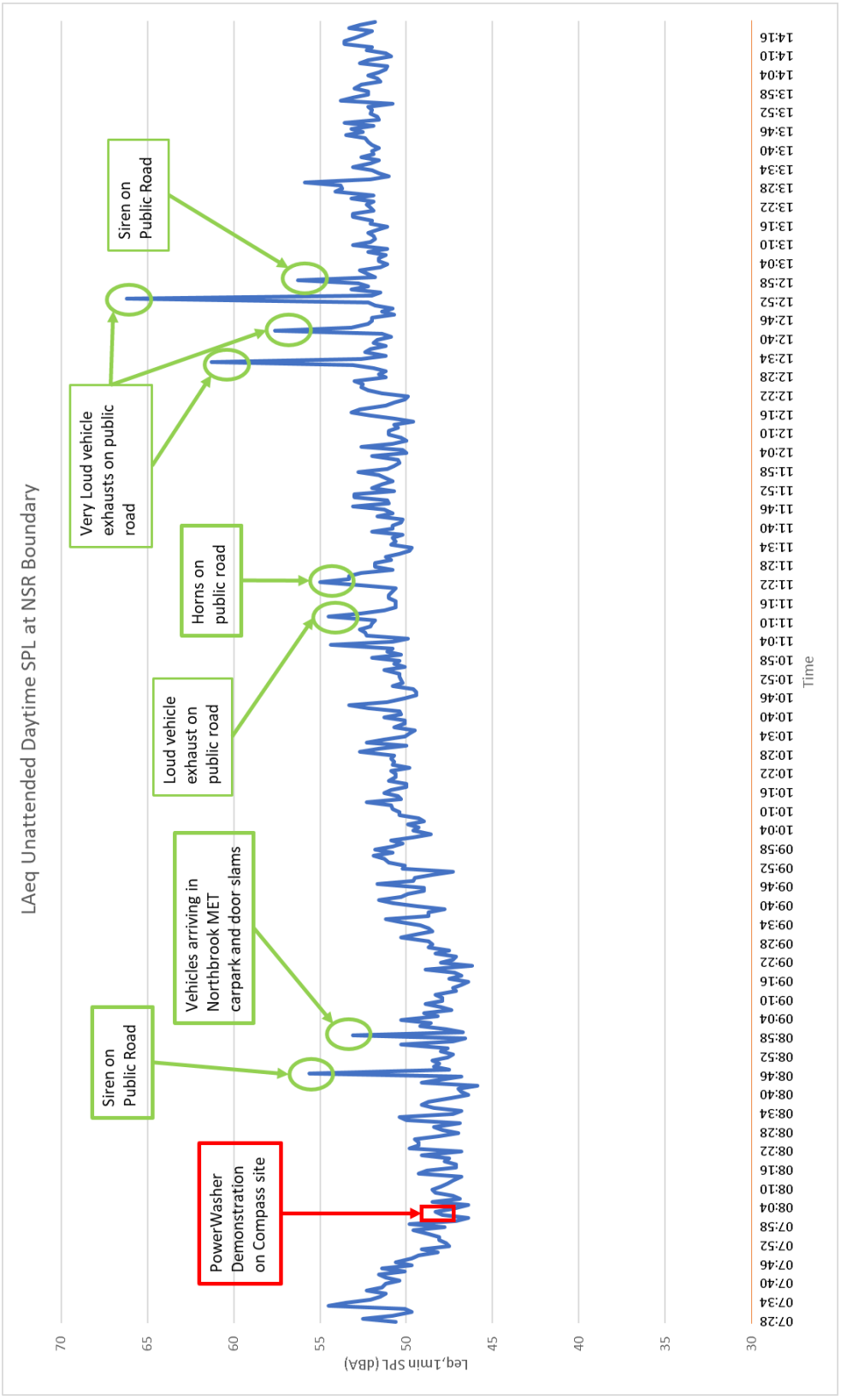


Figure 10: Daytime Un-attended survey of SPL at NSR Boundary (Survey 3)

4.2.4 Commentary on Unattended Survey Visits

As there was no video data for survey 1 it was important to first note that the logarithmic mean average (Leq) SPL for survey 1 un-attended period is 49.9dBA. This comfortably complies with the BS8233:2014 lower guideline criteria of 50dBA for daytime Leq in external amenity areas.

This calculation has also therefore been carried out for unattended surveys 2 and 3.

The comparison of the three surveys can be seen in the table below:

Survey Number	Leq (dBA) per Time Period
1	49.9
2	53.9
3	51.4

Table 6: LAeq,T of un-attended survey periods

These other two SPL values from surveys 2 and 3 are all compliant with the BS8233:2014 Upper Guideline value of 55dBA for daytime Leq in external amenity areas.

It is important also to consider correcting these for distance to see the SPL at the nearest NSR's window: As the measurement location was on the fence line, this was 53.5m from source. Therefore, a difference of 8.5m needs to be accounted for (thus 62m). This equates to a distance attenuation of 1.28dB for a point source (using the formula 20*log(r2/r1). It is again relevant to note that 20Log has been used as the buses are individual items and at this distance are point sources.

The distance-corrected ambient sound levels are shown in the table below:

Survey Number	Leq (dBA) per Time Period
1	48.6
2	52.6
3	50.1

Table 7: LAeq,T of un-attended survey periods (distance-corrected)

Using the 13dB attenuation for an open window (as outlined in section 4.1.4) these values become 35.6dBA – 39.6dBA.

When looking at the values for the November 2021 survey prior to the existence of buses on site, the LAeq for the same time period (08:00 – 17:30hrs) was 50.6dBA.

The difference between the LAeq with buses (Table 7) and without buses (above) ranges between -2dB, -0.5dB and 2dB, with an average of -0.2dB.

This suggests that the Compass Travel's operations during the daytime have no change to the ambient sound level for the area by the nearest NSRs.

This can also be confirmed by the annotations on the graphs for surveys 2 and 3 (figures 8 and 9) showing that all the high peaks are from sources extraneous to Compass Travel.

4.3 Evening Attended Surveys

4.3.1 Survey 1 – 11th January 2024

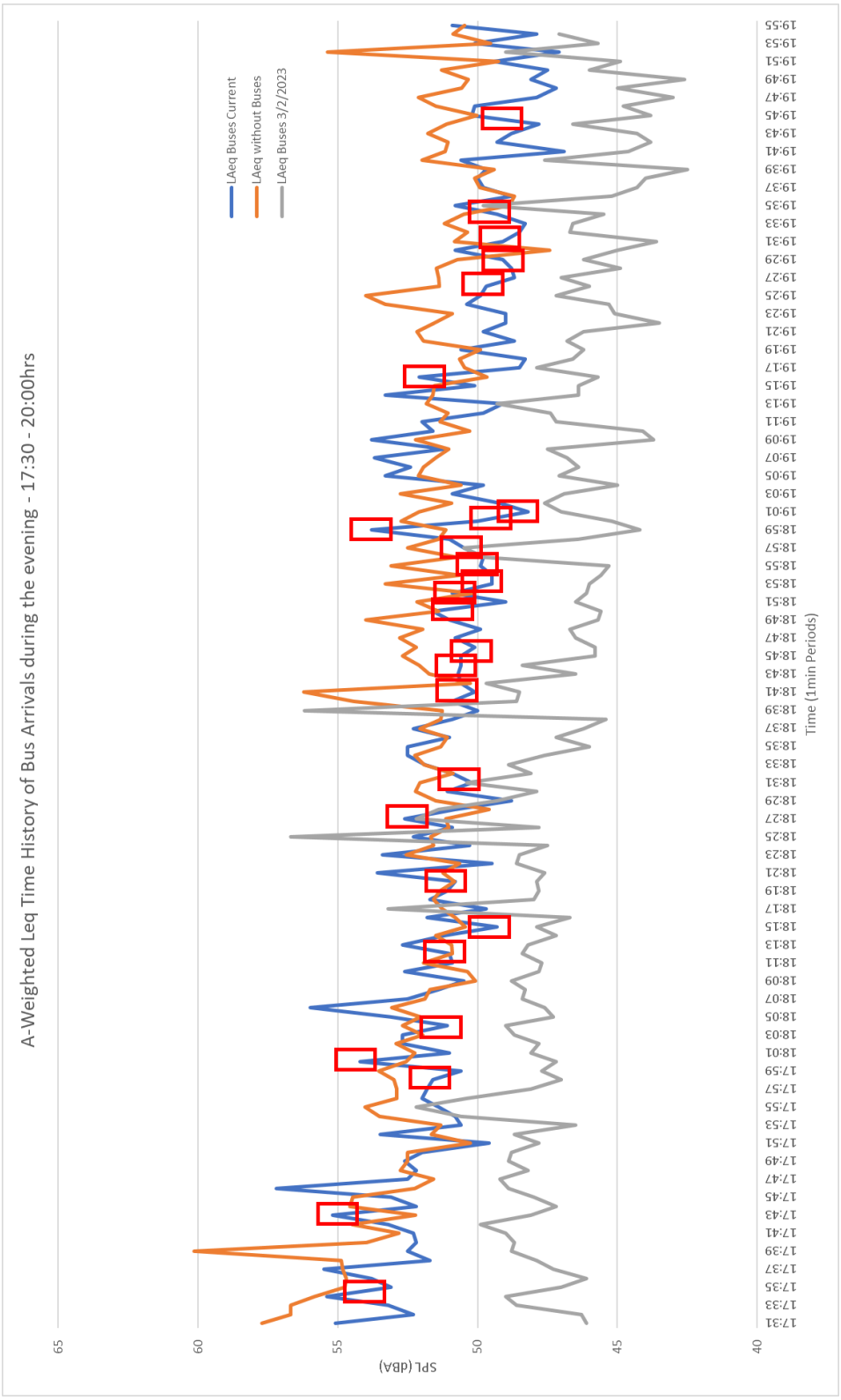


Figure 11: SPL at NSR boundary 17:30 – 20:00hrs (Survey 1)

4.3.2 Survey 2 – 12th April 2024

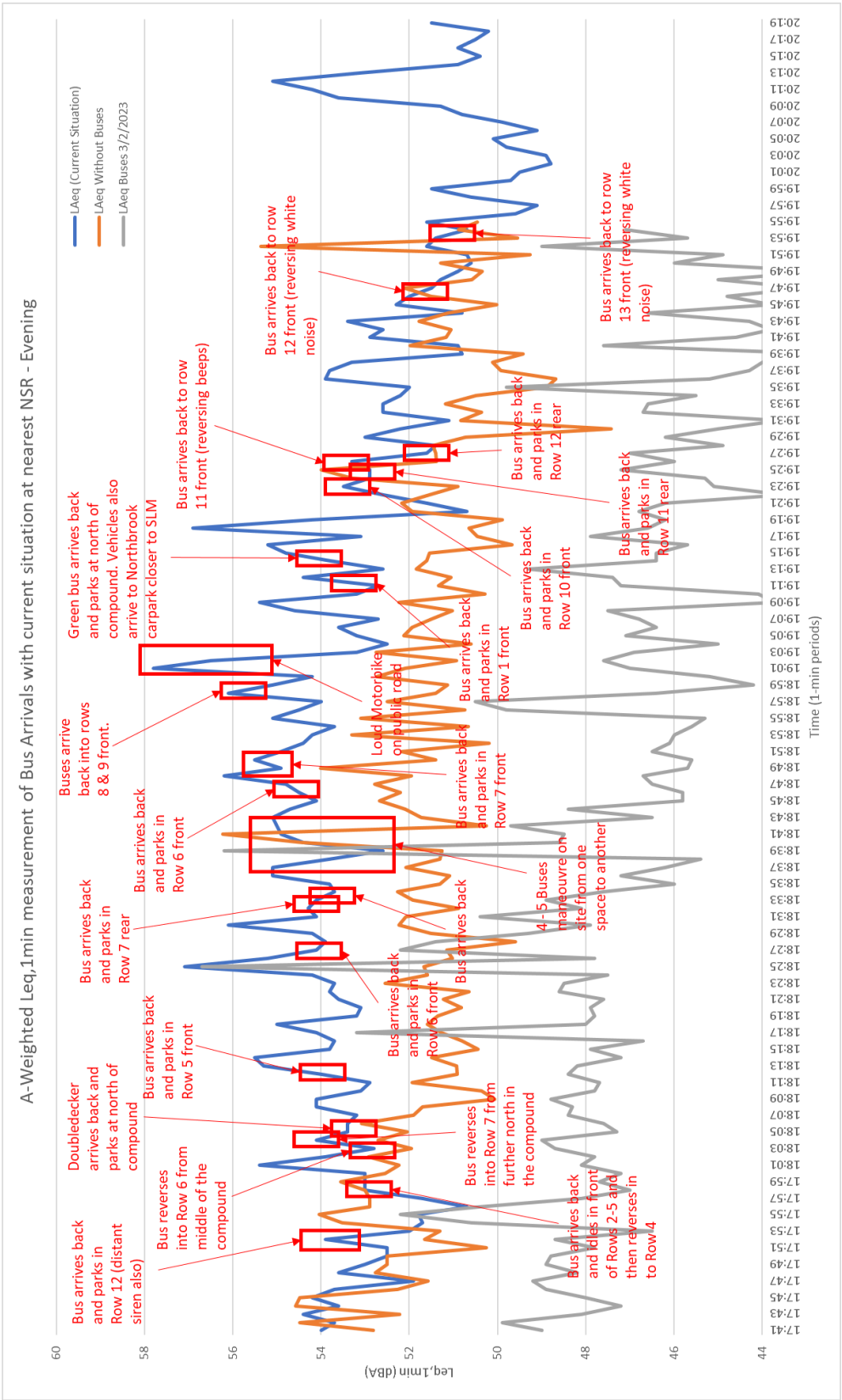


Figure 12: SPL at NSR Boundary 17:40 - 20:20hrs (Survey 2)

4.3.3 Survey 3 – 27th June 2024

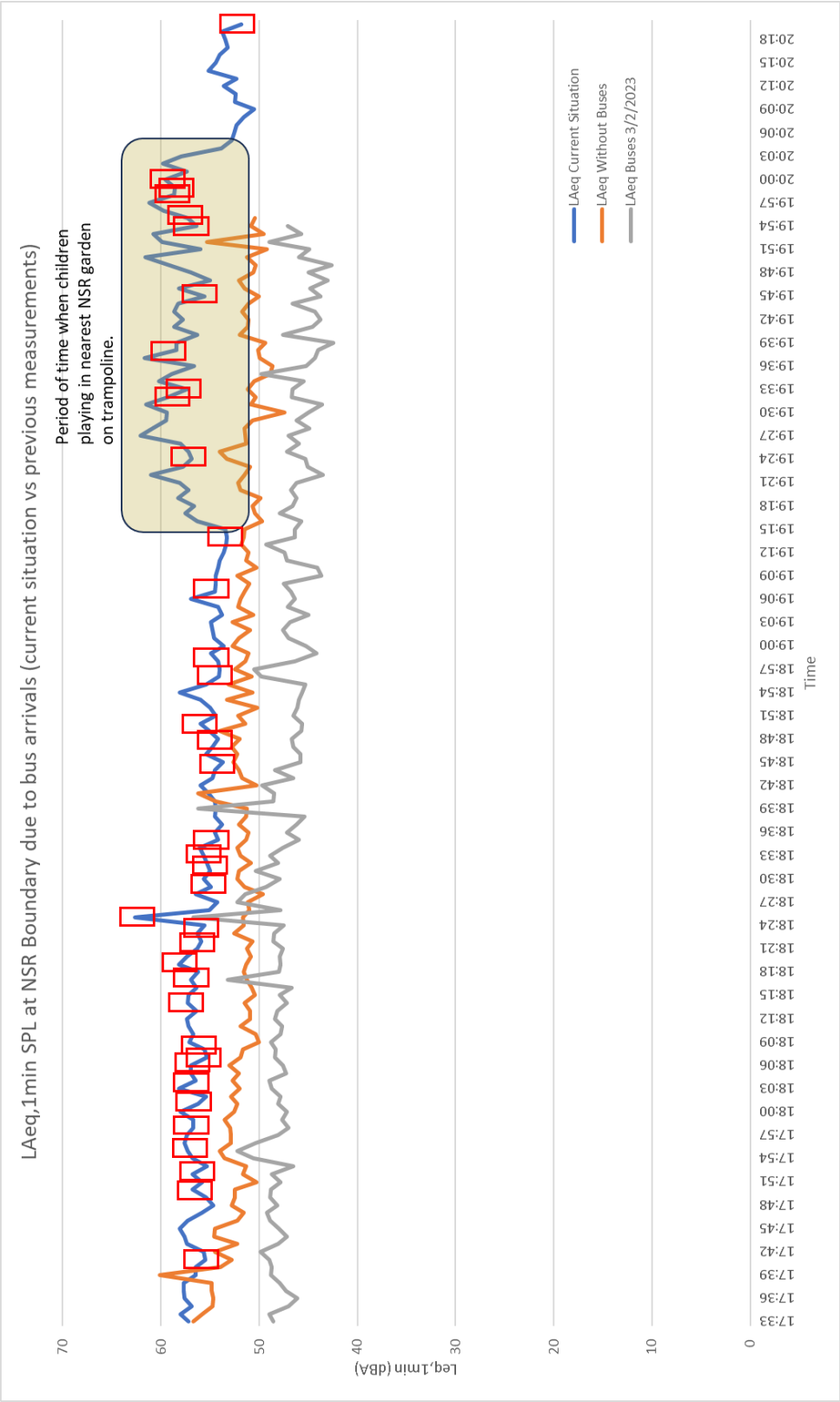


Figure 13: SPL at NSR Boundary 17:35 - 20:20hrs (Survey 3)

4.3.4 Commentary on Evening Attended Visits

Survey Number	Leq (dBA) per Time Period
1	51.4
2	53.4
3	56.9* (55.8)

Table 8: LAeq,T of evening attended survey periods

* In the table above, survey number 3 contains data which included the sound level of children playing in the nearest NSR's garden on a trampoline for just short of 1 hour. Without this sub-period included, the Leq becomes 55.8dBA as per the value in brackets.

All of the Leq sound pressure level values in the above table include a significant amount of "local" activity from vehicles arriving and departing due to associated events occurring in the Northbrook MET buildings.

Distance Corrected using the same distance correction as used in section 4.1.4 of this report (1.9dB distance attenuation) It is again relevant to note that 20Log has been used as the buses are individual items and at this distance are point sources the values in Table 8 become:

Survey Number	Leq (dBA) per Time Period (Distance-Corrected)
1	49.5
2	51.5
3	53.9

Table 9: LAeq,T of evening attended survey periods (Distance-Corrected)

Comparing these with the ambient noise levels prior to the existence of buses on site, the differences range between -0.8, 1.2 and 3.6dB, with a mean average of 1.3dB. (Survey 3 contained significantly more extraneous local traffic to the other two surveys, which explains why the difference is higher).

It is now also important to re-state that the earliest perception of change in sound level to a human is 3dB, of which the average change in sound level outlined above is less than.

The average change in ambient sound level (1.3dB) during this evening period is therefore considered negligible.

5 Power Washer

It is understood that the Local Authority have requested for the power washer used to clean the outside of the buses daily to be enclosed.

Whilst BS4142 is not being used in this assessment for the buses, it is relevant to this item of plant.

The requirements of BS4142 are below:

5.1 BS4142:2014-A1:2019 Criteria

This document provides a means of assessing the impact of industrial or commercial sound upon nearby noise-sensitive receptors, including residential properties.

It does this by comparing the Rating Level of the noise from the industrial or commercial source with the pre-existent L_{90} background noise level affecting the same noise-sensitive premises. The Standard provides guidance that:

a) Typically, the greater the difference, the greater the magnitude of the impact.

b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact, depending on the context.

5.2 General

The power washer is a Karcher Professional HDS 6/12 C. This has a stated A-Weighted Sound Power Level (L_{WA}) of 94dB.

Measurement taken at 1m from the machine itself in-situ during operation show that the sound pressure level is Leq,1min = 80.7dBA.

The location of the power washer is in the far south-western corner of the Compass Travel depot, which is the furthest point from the façade of the nearest NSR some 87m away from where it is stationed.

Using the distance correction equation for a point source: 20Log(R2/R1) where R2 is the new measurement distance (87m) and R1 is the original measurement distance (1m) we find that an attenuation of 38.8dB due to distance is to be applied.

This results in an SPL of 41.9dB at the façade of the nearest NSR.

In order to properly assess this, the Rating Level needs to be calculated and in order to do this, consideration of noise character is assessed in terms of tonality, impulsivity, intermittency and On-Time.

5.3 Tonality

The 1/3rd octave band frequency profile of the power washer was measured at source and is shown below:

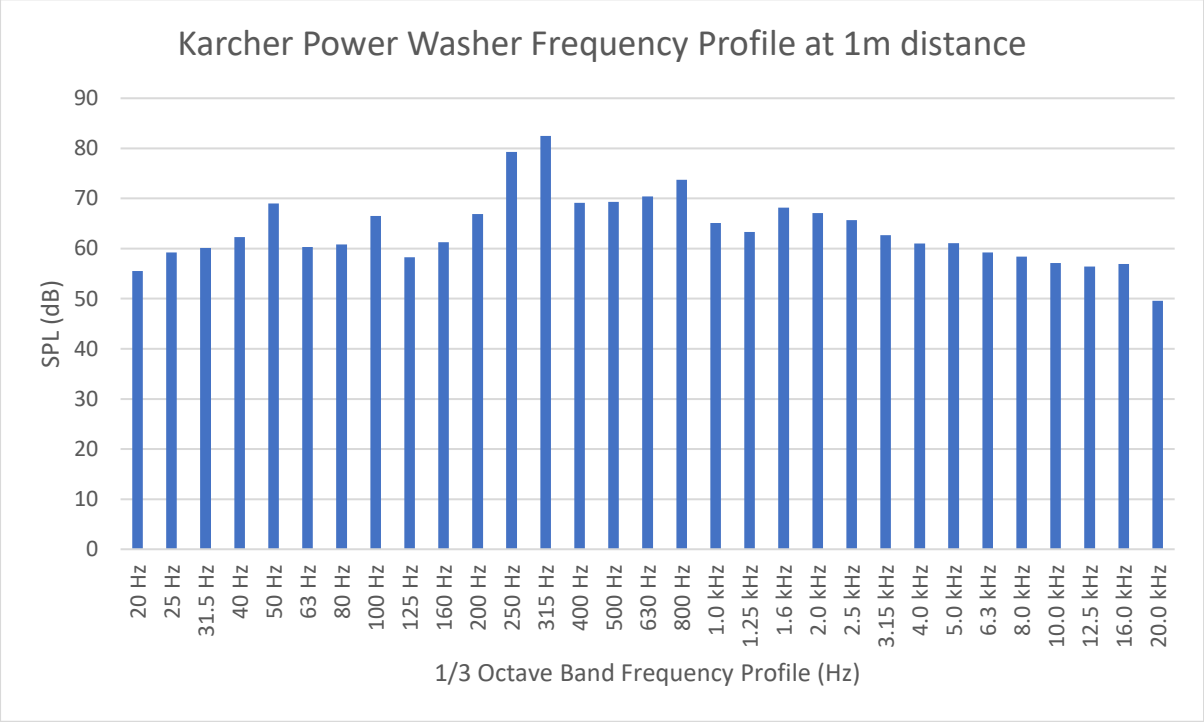


Figure 14: Frequency Profile of Power Washer at 1m distance

Annex C of BS4142 provides an objective method of assessing if a sound is tonal. Tonality is defined as present if a 1/3rd octave band frequency is significantly higher than those to which it is immediately adjacent. There is a sliding scale of the magnitude of difference that needs to exist for this to be true:

- 15dB in the low-frequency 1/3rd octave bands 20Hz – 125Hz
- 8dB in the mid-frequency 1/3rd octave bands 160Hz – 400Hz
- 5dB in the high-frequency 1/3rd octave bands 500Hz – 10kHz

Assessing the graph in Figure 14, none of these situations are true and as such there is no tonality present at source.

When conducting measurements of buses at the boundary with the NSR, it was not possible to detect the sound of the Karcher power washer unit and as follows, zero tonality.

5.4 Impulsivity

Impulsivity is defined as the sudden and rapid change in a sound level both on and off when assessed at the boundary with the NSR. The power washer was not detectable at the NSR location and thus impulsivity was also not relevant.

5.5 Intermittency

Whilst the power washer is on for a short period of time and then off for a short period of time, as it is used on demand, the sound of the Karcher power washer unit was not actually detectable at the boundary with the NSR and as such is also not relevant to this assessment.

5.6 Rating Level

The Rating Level, therefore, is the same as the previously calculated SPL of 41.9dBA, but rounded to 42dBA as required.

5.7 Background Sound Level

Statistical Analysis of the existing A-Weighted L90 Background Sound Level (taken from November 2021 prior to the existence of Compass Travel on site) is seen in the graph below. It shows that the most frequently occurring L90 Background Sound Level is 52dBA.

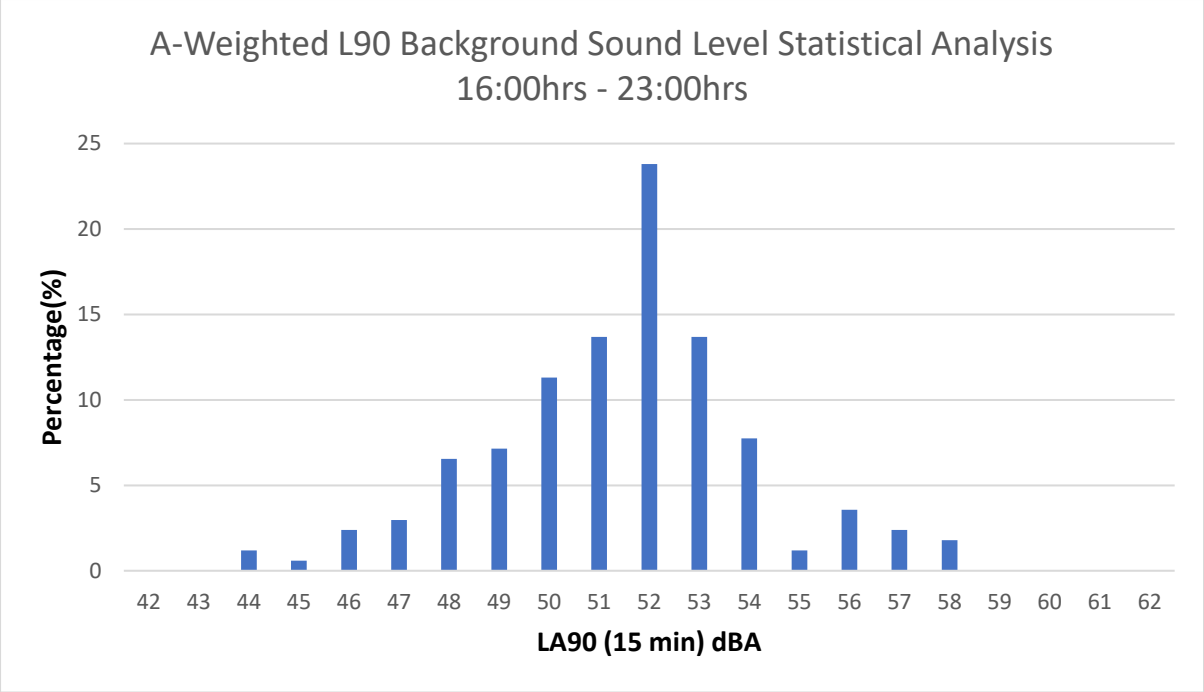


Figure 15: Existing L90 Background Sound Level (prior to Compass Travel occupation)

5.8 Rating Level vs Backround

The Rating Level of the Karcher Power Washer is 42dBA. The Existing L90 Background Sound Level is 52dBA. Therefore, the Rating Level is 10dB below Background and it follows that Adverse Impact is very unlikely. Additional context below confirms this outcome.

5.9 Additional Context

As seen earlier in this report the Daytime Leq,T SPL was above this even prior to the operation of Compass Travel on this site. Therefore, it is concluded that the Karcher

Professional Power Washer does not contribute to the existing ambient (Residual) Sound Level and as such no mitigation measures would be required to control its sound.

Subjective assessment (listening test) during the evening bus arrival measurements (Section 4.3 of this report) was carried out and the Karcher unit was completely inaudible at the attended measurement location.

6 Uncertainty

Prior to any and all surveys, the sound level meter/s was/were calibrated using a field calibrator at 114dB. Calibration was also carried out at the end of the survey to ensure that no drift had occurred (none did).

In any calculation carried out, rounding is only carried out once, at the end of the calculation to prevent double-handling.

All surveys were carried out on days with suitable weather (dry and wind speeds below 5m/s).

The data in this assessment is provided with comparisons between how the site is currently being used during 3 different seasons (Winter, Spring and Summer) against a previous assessment 2 ½ years ago prior to buses operating on site. The prior assessment was, of course, only carried out once, during colder months and so the historical data does not show the existing ambient sound pressure levels on site during warmer months, however it is unlikely to change significantly. Notwithstanding the above, it is still considered that the assessment in this report is a conservative assessment.

7 Conclusion

This report has seen the assessment and comparison of the current bus operations on site with the previous assessments carried out on the site prior to Compass Travel being present.

The main outcome of this assessment in Section 4 shows that the average LAeq sound pressure levels reaching the NSR from Compass Travel's current operation in comparison with when they were not present sees changes in SPL ranging from 0 - 2dB.

Considering that the lowest detectable change in SPL by a human is 3dB, it is concluded that these differences are negligible and would not have an adverse impact on residents.

Additionally, given the context of the site being close to an active carpark and close to a busy road network, the NSRs are exposed to extraneous sound sources which, as can be seen from the graphical data in Section 4, are often significantly louder than that of the Compass Travel operations.

Furthermore, the power washer used to clean buses has been assessed against BS4142. The outcome is that its Rating Level is 10dB below the existing background sound level and is subjectively in-audible at the NSR. It is concluded that the Power Washer is highly unlikely to cause any adverse impact and mitigation for this (an enclosure) would not be required.

Based on the outcome of this report, it is recommended that planning consent for permanent operation is not withheld on the basis of noise.

Appendix A – Calibration Certificates

MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

Date of Issue: 19 May 2023

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Certificate Number: TCRT23/1388

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Approved Signatory

K. Mistry

CUSTOMER	Acoustic South East Unit 8, Highdown House Shoreham Airport Shoreham-by-Sea West Sussex BN43 5PB
ORDER No	PO-0017 Job No TRAC23/05229
DATE OF RECEIPT	15 May 2023
PROCEDURE	Calibration Engineer's Handbook section 3
IDENTIFICATION	Sound level meter Norsonic type 118 serial No 31460 connected via a preamplifier type 1206 serial No 30779 to a half-inch microphone type 1225 serial No 91973 fitted with a foam windshield type 1451. Associated calibrator Norsonic type 1251 serial No 30974 with a one-inch housing and adapter type 1443 for half-inch microphone.
CALIBRATED ON	19 May 2023
PREVIOUS CALIBRATION	Calibrated on 13 May 2021 Certificate No. TCRT21/1324 issued by this laboratory.

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

CERTIFICATE OF CALIBRATION

ISSUED BY: **CALIBRATION MAINTENANCE & REPAIR LTD**

DATE OF ISSUE: 18 November 2022 CERTIFICATE NUMBER: **1135953**

BS EN ISO 9001:2015 APPROVED BY **LRQA**

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Approved Signatory
Electronically Authorised Document

- ☐ P K CLARK
- ☐ R J WADE
- ☐ M A FROST
- ☒ M S PARDOE
- ☐ J FRYER
- ☐ M FOY

Customer	**ACOUSTIC ASSOCIATES SUSSEX LTD**
Order No	**PO-0014**
Equipment Description	**PRECISION SOUND ANALYSER**
Manufacturer	**NORSONIC**
Model	**NOR140**
Serial No	**1402832**
Ident No	**TEAM 3**
Date Of Calibration	**18 NOVEMBER 2022**

INSTRUMENT CONDITION

Adjustments Made	**YES**
Repairs Made	**NO**

ENVIRONMENT

The instrument was placed in the laboratory environment for a minimum period of 4 hours and was operated prior to calibration.

Measurements were made in ambient conditions of 22 °C ± 3 °C and 45 %RH ± 15 %RH.

PROCEDURE

Measurements were performed in accordance with the in house laboratory procedure 0225
All equipment used has been calibrated/verified against measurement standards or reference equipment traceable to International or National Measurement Standards as specified in our control procedure WI64
The results attached to this certificate refer to measurements made at the time of test and not to the instrument's ability to maintain calibration.
The attached results are a true record of the levels required to confirm the instrument meets the original stated manufacturer's specification and accuracy where shown.