PC Environmental Ltd
11 Mill Court
Sawmills
Durley
Southampton SO32 2EJ
Phone 44 (0) 1489 891853
info@pcenvironmental.co.uk

ENVIRONMENTAL NOISE IMPACT ASSESSMENT REPORT

Project: Retrospective change of use to car storage yard (Use Class B8) and reconfiguration of carpark to provide an uplift from 241 spaces to 333 spaces

Client: Shoreham Vehicle Auctions

Date: 12th June 2025

Author: Dr P Clark CEng MIMechE MIOA
Checked by: Samuel Monk MSc MIOA

Our reference: 90768/A

Revision: B

Notes: Description of project changed. Driver's accommodation building removed (4/4/25) and reference to car valet removed (12/6/25).

1. INTRODUCTION

1.1 The proposed development site is located in Worthing, West Sussex, and is situated on Southdownview Road to the rear of Broadwater Apartments which is the former EDF Energy office building, having been granted permitted development for conversion to residential apartments in 2019. The development site is the former car park of the office building which gained consent for industrial uses (ref AWDM/1008/19) in 2020 and for a rationalised layout (ref. AWDM/0056/22) in 2023. The surrounding area is characterised predominantly by its industrial and commercial appearance in relation to the Key Industrial Estates and Business Parks Local Plan designation that covers the entirety of the site. Shoreham Vehicle Auctions Ltd are to maintain the use of the Car Park for vehicle storage prior to delivery to their auction site in Shoreham, West Sussex. Currently, there are 241 car parking spaces at the site and this will be expanded to accommodate more vehicles (total 333). A 2.4m close-boarded, solid timber acoustic fence runs along the western perimeter of the Site.

1.2 The main noise sources for the proposed development are from vehicles arriving/departing the site. The site location is given in Figure 1 below:

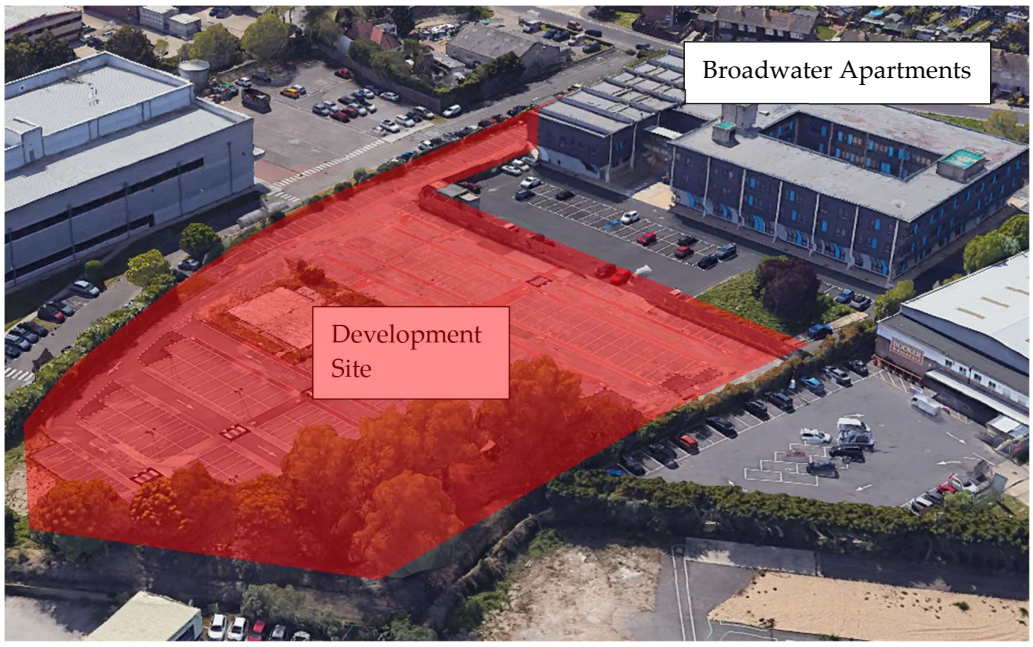


Figure 1: Site Location (© Google Earth™)

1.3 The assessment shows that noise from the proposed use of the Car Park as a Vehicle Storage facility with have no significant noise effects on the neighbouring residential properties.

2. NOISE MEASUREMENTS

2.1 Environmental noise measurements were carried out from Thursday, 14th to Tuesday, 19th November 2024. Sound level measurement equipment was installed (a) on the western site perimeter fence, close to the Broadwater Apartment building, and (b) on the edge of the site access road, close to its junction with Southdownview Road at the front of Broadwater Apartments. The measurement equipment is listed below in Table 1.

No	Description
1	2x Larson Davis Model LxT Class 1 Sound Level Meter with Model 377B02 ½" Diameter Condenser Microphone
2	Larson Davis Model CAL200 Sound Level Meter Calibrator.

Table 1. Environmental Noise Measurement Instrumentation

2.2 All acoustic equipment conforms to the relevant parts of BS EN 60651:1994 (equivalent to BS 5969:1981) for the requirements of Type 1 acoustic accuracy. Additionally, the relevant equipment conforms to the specifications contained within BS EN 60804:1994 (equivalent to BS 6698:1976) for integrating sound level meters.

2.3 In order to verify the correct operation of the equipment on site, an acoustic calibrator was applied during the course of the measurements. A maximum change of 0.1 dB(A) was noted, this can be considered as an insignificant change. The calibrator complies with the specifications of IEC 942:2003. The instrumentation was previously factory calibrated in September 2024.

2.4 Fast meter response was used for all measurements carried out during the course of the survey.

2.5 Noise levels are expressed in terms of continuous equivalent noise levels (L_{Aeq}) over an appropriate time period. The use of L_{Aeq} allows non-steady and non-continuous noise to be assessed and compared to the existing noise climate. L_{Aeq} is referred to as the ambient noise level. In addition to this

background noise levels have also been measured and are expressed as L_{A90}. A full explanation of terminology commonly used in the measurement and assessment of noise levels is given in Appendix B at the end of this report.

3. RESULTS

3.1 Noise level measurements were carried out at 15-minute intervals during the survey period. Ambient (L_{Aeq}) and background (L_{A90}) noise levels were measured. Average noise levels for the daytime (0700 to 2300 hrs) and nighttime period (2300 to 0700 hrs) have been determined. The results are summarised in Tables 2a, and b below.

Rear of Apartments	Day	Night
L_{AeqT}	50.9	46.8

Access Road	Day	Night
L_{AeqT}	51.5	45.9

Table 2: Summary Ambient (L_{AeqT}) Noise Levels

3.2 Although the survey was not attended on a full-time basis, it was noted during site visits, to deploy and collect the noise monitors, that environmental noise levels on the site are dominated by plant which serves the neighbouring industrial units. Weather, during the course of the survey, was variable with some periods of wind and rain. Full listings of 15-minute interval noise data for each measurement location is given in the graphs at the end of this report (Figures A1a & b). The locations of the noise monitors are shown in the photographs given in Figures A2a & b.

3.3 In addition to this, the noise data graphs show that noise levels in the area do vary throughout day and night-time periods; this is to be expected. To determine an appropriate background noise level for the assessment, statistical analyses of the data measured have been carried out. The resulting daytime and night-time noise level histograms are given in Figure A3 (for Location A – rear of Broadwater Apartments) which show that the representative background noise levels are 42 dB $L_{A90,15min}$ during the daytime and 39 dB $L_{A90,15min}$ at night for properties. For side access road (Location B) at the front of Broadwater Apartments representative background noise levels are 42 dB and 36 dB for day and night times respectively.

Vehicles Arriving/Departing

3.4 The majority of vehicles arriving and departing the site will be cars driven in and out along the access road. The existing car park has 241 spaces. The proposal is to increase car parking spaces by approximately 20%. This corresponds to a less than 1 dB increase in noise which is barely perceptible. Some of the vehicles will be transported to and from the facility using a car transporter. The use of a transporter would typically occur once per day (i.e. in any one-hour period[1], a transporter would arrive or depart). Noise levels from HGVs vary significantly but a typical worst-case noise level has been shown to be 77 dB L_{pA} (sound pressure level) at 3m from the vehicle. For the assessment of noise from a transporter arriving and departing it is assumed that each vehicle will take approximately 30 seconds to pass by Broadwater Apartments. During the loading/unloading operation, it is

[1] The assessment period is one hour for daytime. No vehicle arrivals/departures would occur at night.

assumed that transporter engine be switched off. Calculated noise levels are determined by:

$L_{Aeq,T} = L_{pA}$ *at 3m* $+ 10log_{10}(T_{m1}/T_o) -$ *Distance Correction* $+ 10*log_{10}(N)$

Where L_{pA} *at 3m = 77 dB*
T_{m1} *= 30 seconds*
T_o *= 3600 seconds for daytime*
Distance correction = 0 as Broadwater Apartments are approx. 3m from access road centreline
N = number of vehicle movements (assumed to be 1)

The resulting $L_{Aeq,1hour}$ for transporter movements on the access road passing Broadwater Apartments is 56 dB $L_{Aeq,1hour}$. The net change in ambient noise level (over 12 hour day) will be a negligible increase in $L_{Aeq,day}$ (less than 0.5 dB). The existing ambient noise level at the front of Broadwater Apartments is 51.5 dB L_{AeqT} and the addition of transporter pass by noise would result in 56 dB $L_{Aeq,1hour}$. According to *IEMA*[2] *Guidelines for Environmental Noise Impact Assessment,* a 4.5 dB increase in ambient noise represents a "moderate" impact (for a maximum of only 2 hours per day)

4. CONCLUSION

4.1 Sussex Vehicle Auctions are to use the EDF Energy office building former car park which is located at the rear of their former offices which are now Broadwater Apartments. A noise impact assessment has been carried out to determine the noise impact on Broadwater Apartments. The assessment has shown that the proposed use will have no significant detrimental noise impact on the Apartments.

[2] Institute of Environmental management and Assessment.

APPENDIX A: GRAPHS AND FIGURES

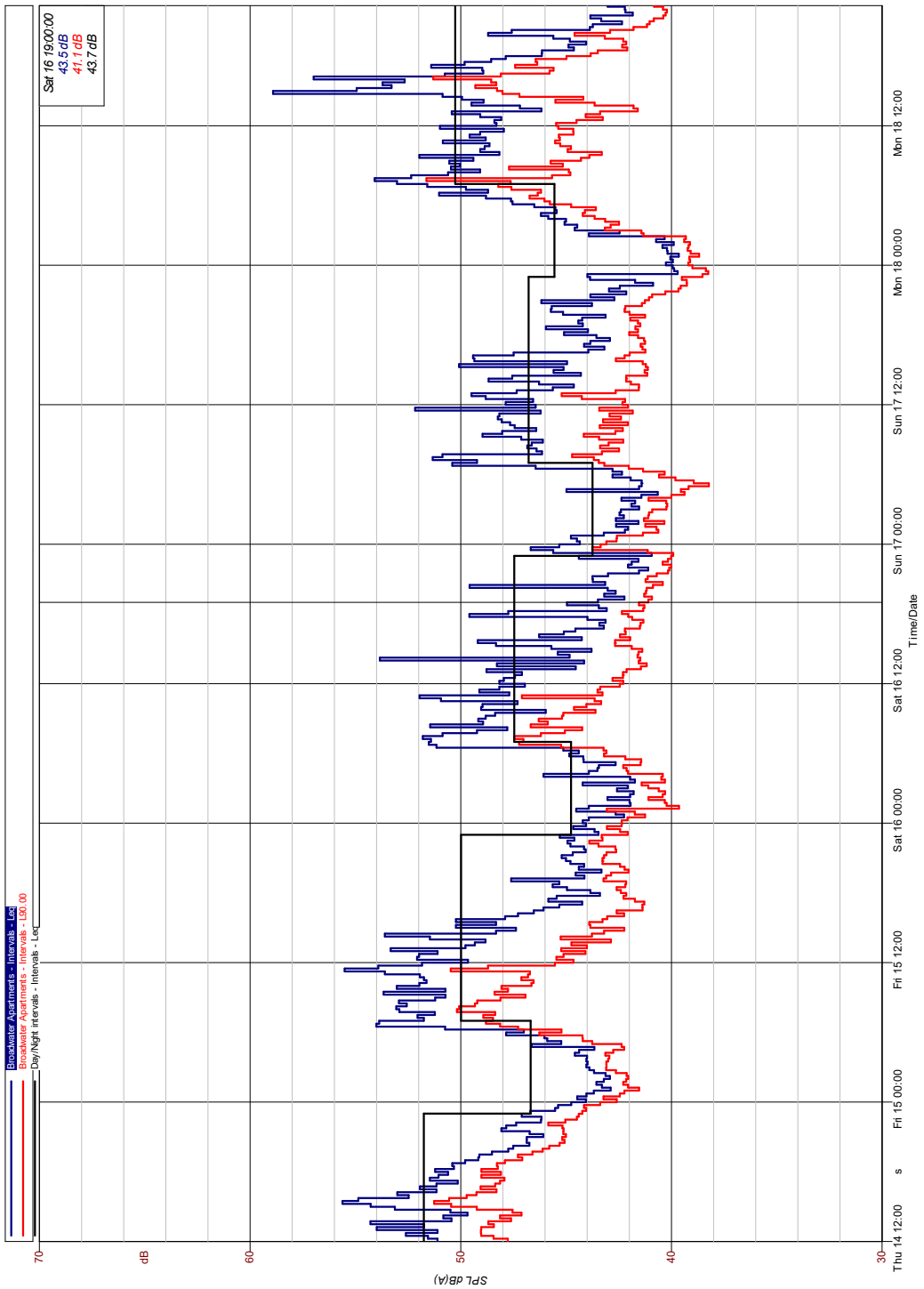


Figure A1a: Environmental Noise Levels – Broadwater Apartments

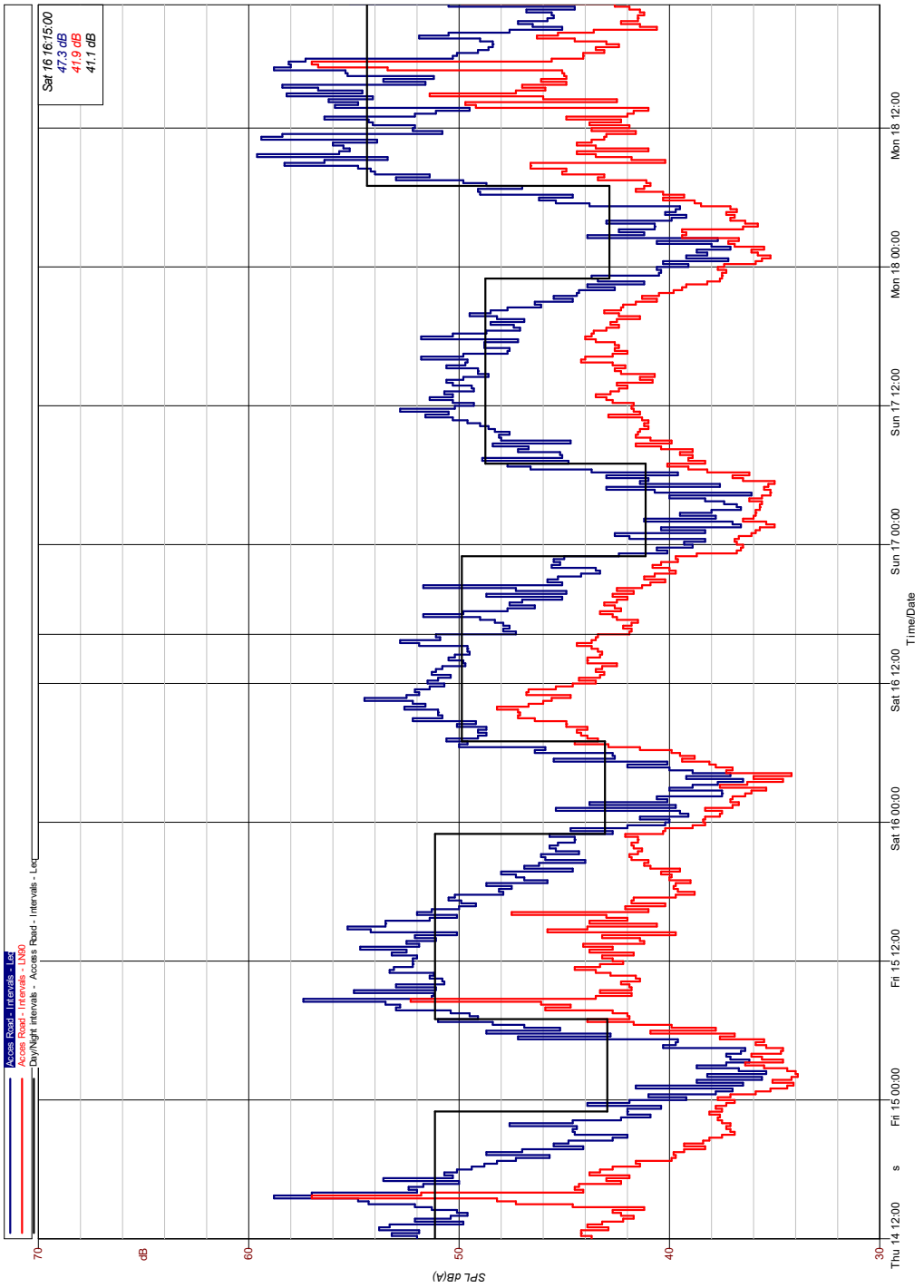


Figure A1b: Environmental Noise Levels – Access Road (front of Broadwater Apartments)



Figure A2a: Noise Monitor at Rear of Broadwater Apartments

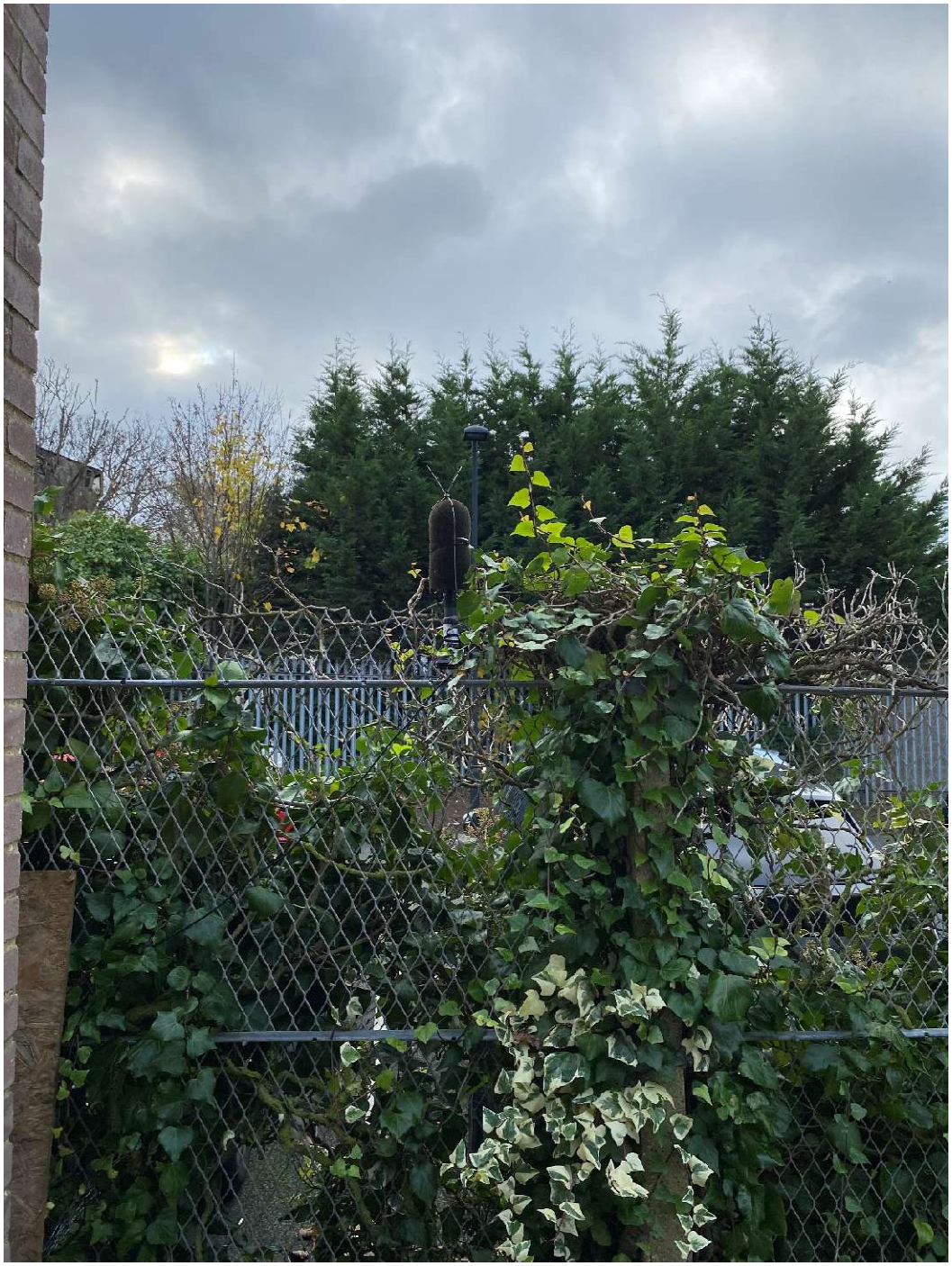
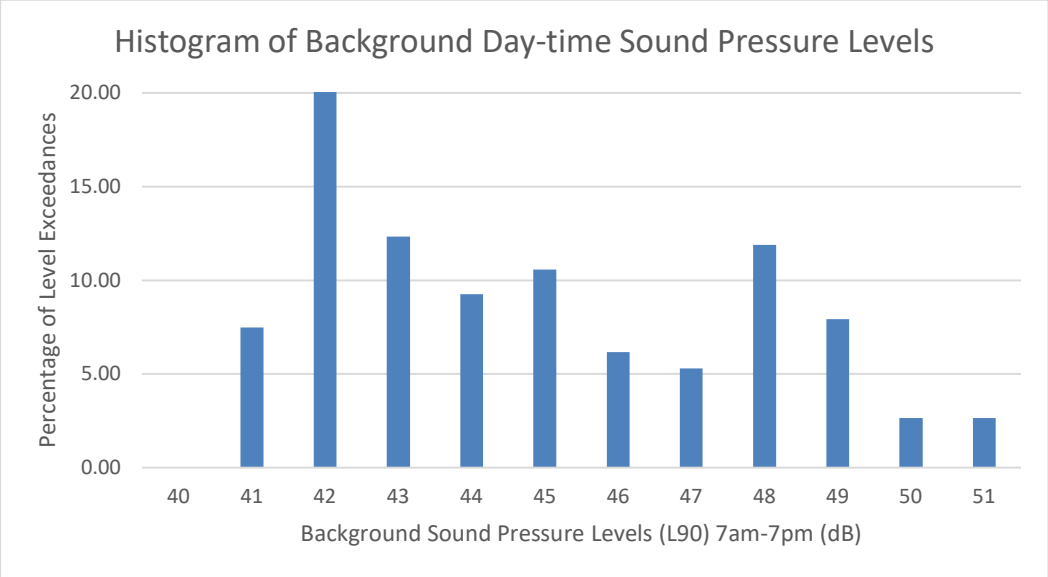
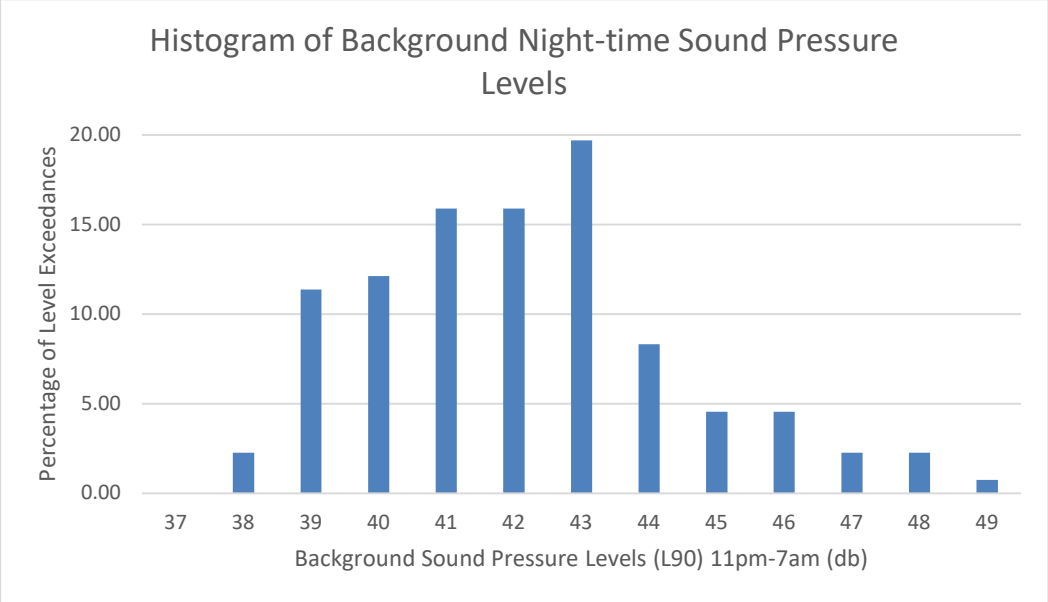


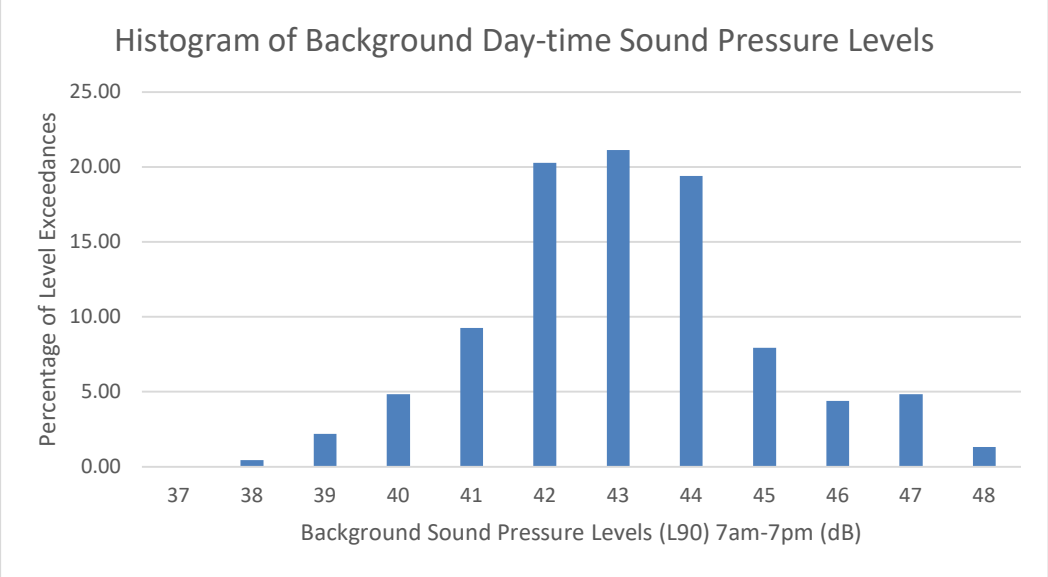
Figure A2b: Noise Monitor close to Access Road (front of Broadwater Apartments)

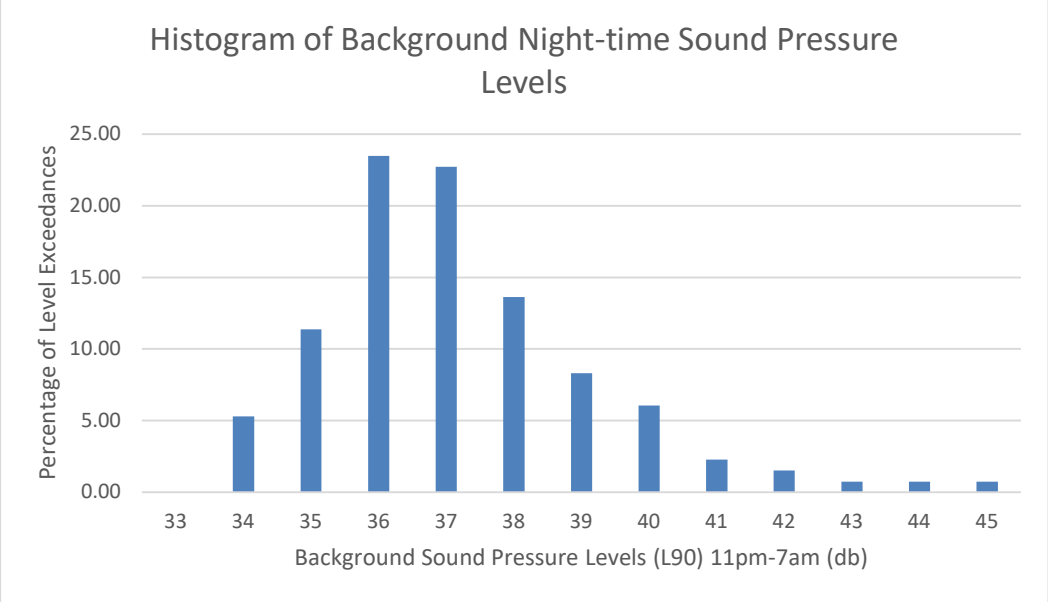
Figure A3 Background Noise Level Histograms





Rear of Broadwater Apartments.





Access Road (front of Broadwater Apartments)

Figure A4: Proposed Site Layout



APPENDIX B: GLOSSARY OF NOISE TERMS AND UNITS.

1.0 Noise

1.1 The sounds that we hear are as a result of successive air pressure changes. These air pressure changes are generated by vibrating sources, such as train engines or wheels, and they travel to a receiver, i.e. the human ear, as air pressure waves.

1.2. The human ear is capable of detecting a vast range of air pressures, from the lowest sound intensity that the normal ear can detect (about 10^{-12} watts/m^2) to the highest that can be withstood without physical pain (about 10 watts/m^2). If we were to use a linear scale to represent this range of human sensitivity it would encompass more than a billion units. Clearly this would be an unmanageable scale yielding unwieldy numbers.

1.3. The scale can be compressed by converting it to a logarithmic or Bel scale, the number of Bels being the logarithm to the base 10 of one value to another (as applied by Alexander Graham Bell to measure the intensity of electric currents). The Bel scale gives a compressed range of 0 to 12 units which in practice is a little too compressed. A more practical operating range of 0 to 120 is obtained by multiplying by 10, ie. 10 x Bel, which produces the scale units known as decibels or dB.

1.4. Examples of typical sound intensity levels within the decibel range of 0 to 120 dB are listed below:

Commercial four-engine jet aircraft at 100m	120dB
Riveting of steel plate at 10m	105dB
Pneumatic drill at 10m	90dB
Circular wood saw at 10m	80dB

Heavy road traffic at 10m	75dB
Male speech, average, at 10m	50dB
Whisper at 10m	25dB
Threshold of hearing, 100Hz	0dB

1.5. Due to this logarithmic scale noise levels have to be combined logarithmically rather than arithmetically. For example, two equal sound sources of 70 dB each, when operated simultaneously, do not produce a combined level of 140 dB but instead result in a level of 73 dB, ie. A rise of 3dB for each doubling of sound intensity. Subjectively, a 3dB change does not represent a doubling or halving of loudness; to make a sound appear twice as loud requires an increase in sound pressure level of about 10dB.

1.6. The subjective loudness of noise can be measured by applying a filter or weighting which equates to the frequency response of the human ear. This is referred to as an A-weighting and when applied results in noise levels expressed as dB(A).

1.7. dB(A) noise levels can be measured using a variety of noise indices. The index which correlates best with human response due to machinery noise is the L_{Aeq} this is the A-weighted L_{eq} which is referred to as the 'equivalent continuous noise level' and is a measure of the total sound energy generated by a fluctuating sound signal within a given time period.