



24Acoustics

Armstrong House
3 Bassett Avenue
Southampton
SO16 7DP

T: 02381 555 000

E: info@24acoustics.co.uk

**EVERGREEN HOUSE
LONDON**

GENERATOR NOISE IMPACT ASSESSMENT

Technical Report: R7947-1 Rev 0

Date: 17th April 2019




For: Evergreen Marine Corp.
Evergreen House
160 Euston Road
London
NW1 2DX

24 Acoustics Document Control Sheet

Project Title: Evergreen House, London – Generator Noise Assessment

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	Name	Position	Signature	Date
Prepared by	Miles Hodge BSc TechIOA	Technician		17/04/2019
Reviewed by	Chris McConnell BSc MSc MIOA	Senior Consultant		17/04/2019
Approved by	Stephen Gosling BEng MIOA	Principal Consultant		17/04/2019
For and on behalf of 24 Acoustics Ltd				

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0	Approved for Issue	Miles Hodge	Chris McConnell	Stephen Gosling

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1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been instructed by Evergreen Marine Corp. to undertake an assessment of the potential impact of plant noise associated with the proposed extension at Evergreen House, London.
- 1.2 This report presents the results of the assessment following site visits and environmental noise surveys undertaken from 4th to 8th April 2019.
- 1.3 All sound pressure levels quoted in this report are in dB relative to 20 μ Pa. A glossary of the acoustic terminology used in this report is provided in Appendix A.

2.0 SITE DESCRIPTION

- 2.1 Evergreen House, London is a sixteen-story building located at 160 Euston Road, London. The site is bounded to the south by Euston Road, to the east by Churchway and to the north by Grafton Place. To the west is Euston Fire Station.
- 2.2 A standby generator is proposed to be installed on the south west of the site. It is understood that the generator will be used in the event of a loss of mains power, this could occur at any time throughout the day or night.
- 2.3 There is existing plant in operation which will remain. This plant includes kitchen extraction systems and air conditioning condensers.
- 2.4 The closest residential property is to the north west on Grafton Place and is shown as Receptor 1 in Figure 1. Other noise sensitive locations include Euston Fire Station (Receptor 2) which is adjacent to the west, a Travelodge hotel (Receptor 3) to the north west and Premier Inn hotel (Receptor 4) to the south east.
- 2.5 Figure 1 shows the existing site layout and surroundings.

3.0 CRITERIA

Local Authority Guidance

- 3.1 Section 6.100 of the Camden Local Plan 2017 [Reference 1] provides criteria for assessing noise from generators and states the following:

"Emergency equipment such as generators which are only to be used for short periods of time will be required to meet the noise criteria of no more than 10dB above the background level (L90 15 minutes). During standby periods, emergency equipment will be required to meet the usual criteria for plant and machinery. Conditions to this effect may be imposed in instances where emergency equipment forms part of the application."

British Standard 4142:2014

- 3.2 BS 4142:2014 [Reference 2] provides a method for rating the effects of industrial and commercial sound on residential areas. The standard advocates a comparison between the typical measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction of up to 15 dBA is applied.
- 3.3 The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of around +5 dBA is likely to be an indication of an adverse impact again depending on the context. 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 upon the context).
- 3.4 On the basis of the above, it is considered that noise from the backup generator should not exceed the background noise level by more than 10 dB.

4.0 ASSESSMENT METHODOLOGY

4.1 The following assessment methodology has been used:

- i. Background noise surveys have been undertaken to determine existing levels of background noise at the nearest residential properties;
- ii. Based on the survey results and Camden Council's requirements, noise limits for the proposed generator have been defined;

5.0 ENVIRONMENTAL NOISE SURVEY

5.1 Environmental noise surveys were undertaken between the 4th and 8th April 2019 to the south west of the site to determine the prevailing background noise levels in the area. The noise monitoring equipment was installed at third floor level (at approximately 6m above ground level) in free-field conditions. The measurement location is shown in Figure 1.

5.2 Background noise levels were measured using the following equipment:

- Rion precision sound level meter Type NL-32;
- B&K acoustic calibrator Type 4231.

5.3 Environmental noise measurements were undertaken in samples of 5 minutes in terms of the overall free-field A-weighted L_{eq} , L_{90} and $L_{max,f}$ noise levels. Measurements were made in accordance with BS 7445:1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use" [Reference 3].

5.4 The instrumentation's calibration was checked before and after the surveys in accordance with the manufacturer's instructions. No significant drift in calibration was recorded. Calibration of 24 Acoustics' equipment is traceable to National Standards. All instruments were fitted with environmental weather shields during the surveys.

5.5 Weather conditions during the survey were fine and dry. Wind speeds were typically lower than 5 m/s.

5.6 The results of the background noise surveys are shown graphically in Appendix B. The typical background noise levels during the proposed plant operating hours have been derived and are summarised in Table 1.

Daytime Background Noise Level 07:00 – 19:00 hours dB LA90, 5 min	Evening Background Noise Level 19:00 – 23:00 hours dB LA90, 5 min	Night time Background Noise Level 23:00 – 07:00 hours dB LA90, 5 min
59	58	56

Table 1: Summary of Typical Measured Background Noise Levels.

- 5.7 24 Acoustics’ interpretation of the typical background noise level is the average minus one standard deviation.
- 5.8 Activity from vehicles on Euston Road are the dominant sources of background noise at the measurement location.

6.0 PLANT NOISE ASSESSMENT

External Plant Noise Limits

- 6.1 Based on the measured background noise levels and Camden Council’s requirements, maximum plant noise levels for the proposed generator, applicable at the nearest residential properties, are shown in Table 2.

Maximum External Generator Noise Levels, dB LAeq		
07:00 – 19:00 hours	19:00 – 23:00 hours	23:00 – 07:00 hours
69	68	66

Table 2: Generator Plant Noise Limits

Plant Noise Assessment

- 6.2 The proposed generator will be a model C275-D5 enclosed generator set by Advanced Engineering. The manufacturer’s data for the generator states a noise level of 75 dBA at a distance of 1 m from the enclosure.
- 6.3 Calculations have been undertaken using the manufacturers’ noise data to determine the generator plant noise levels at the nearest existing noise sensitive properties. Calculations have included corrections for distance and acoustic screening from the roof edge.
- 6.4 The results of the plant noise calculations are shown in Table 3.

Receptor Location	Resultant Noise Levels at Noise Sensitive Properties, dB L _{Aeq}
1 (Grafton Place)	44
2 (Fire Station)	49
3 (Travelodge Hotel)	40
4 (Premier Inn Hotel)	38

Table 3: Calculated Noise Levels at Receptor Locations

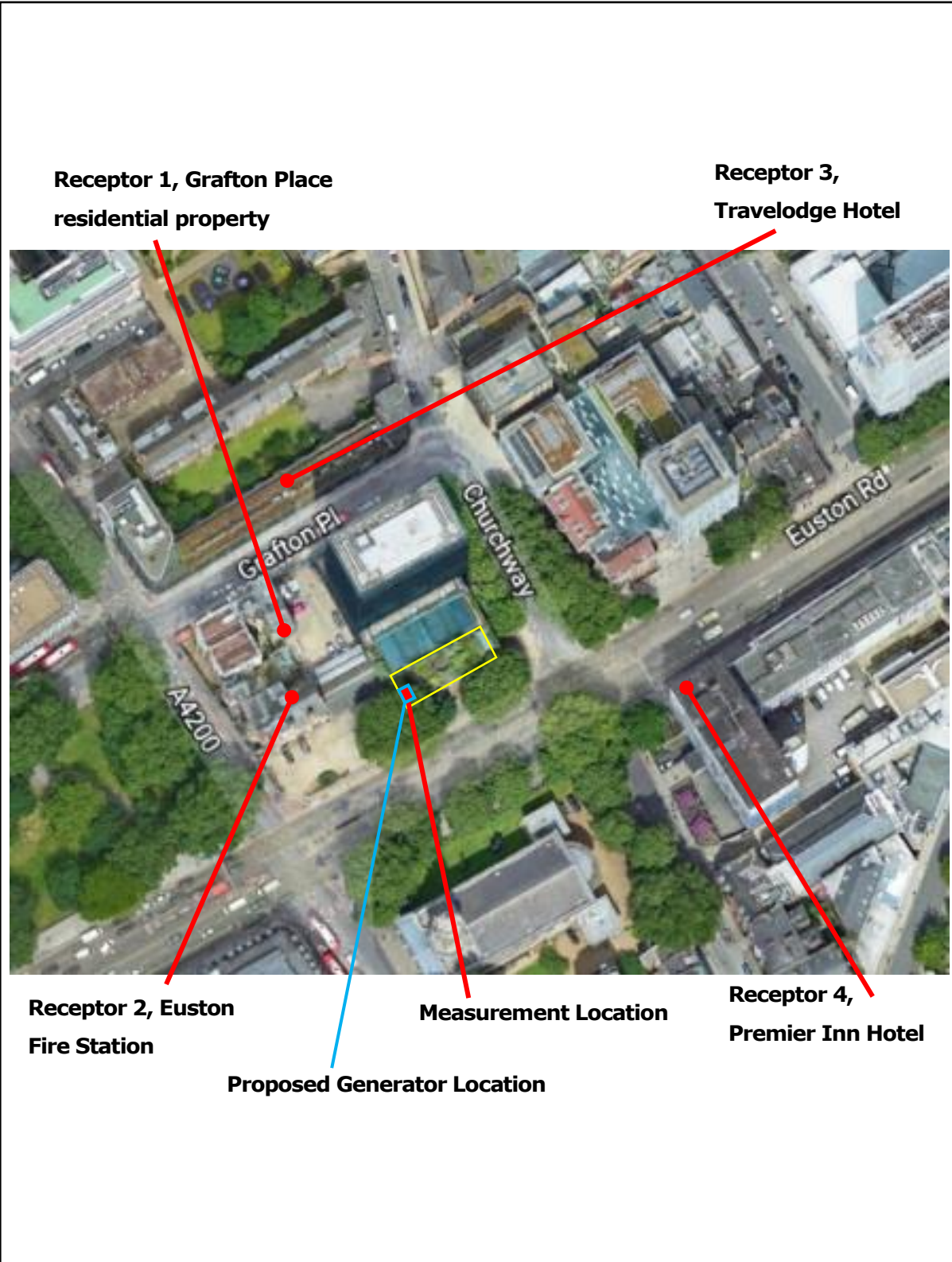
- 6.5 The calculated noise levels in Table 3 are below the external noise criteria set out in Table 2. The proposed generator is therefore considered to comply with LB Camden’s requirements for noise from emergency plant.


7.0 CONCLUSIONS

- 7.1 24 Acoustics Ltd has been instructed by Evergreen Marine Corp. to undertake a plant noise impact assessment for the proposed extension at Evergreen House, London.
- 7.2 Environmental noise surveys have been carried out at the site to determine existing noise levels during daytime and night-time periods.
- 7.3 Based upon the survey results and Camden Council’s guidance, maximum noise levels have been established for the new generator, to be achieved at the nearest residential properties.
- 7.4 Calculations have been undertaken, based on the manufacturer’s noise data, which demonstrate that the proposed generator will comply with Camden Council’s requirements for noise from emergency plant

REFERENCES

1. Camden Local Plan: Appendix 3: Noise thresholds, 2017.
2. British Standard 4142: 2014, Methods for rating and assessing industrial and commercial sound.
3. British Standards Institution. British Standard 7445:1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use, 1991.



Project: Evergreen House, London		Title: Site Layout		
DWG No: Figure 1	Scale: N.T.S.	Rev: A		
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APPENDIX A – ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

- i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

- ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

- iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

- iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B – NOISE SURVEY RESULTS

Ambient Noise Measurements Evergreen House, London 4th - 8th April 2019

